DEPARTMENT OF THE ARMY

NEW ENGLAND DIVISION, CORPS OF ENGINEERS

Cape Cod Canal
Massachusetts

SAGAMORE HIGHWAY BRIDGE

1976 Condition Report

CONTRACT NO. DACW 33-76-C-0005

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CONSULTING ENGINEERS
TWO WORLD TRADE CENTER
NEW YORK, N.Y.

NOVEMBER, 1976

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DESIGN
AND
SUPERVISION
OF CONSTRUCTION
OF
BRIDGES
HIGHWAYS
AIRPORTS
BUILDINGS

November 12, 1976

Department of the Army
New England Division
Corps of Engineers
424 Trapelo Road
Waltham, Massachusetts 02154

Attn: Mr. John W. Leslie
Chief, Engineering Division

Re: Contract No. DACW 33-76-C-0005
Inspection of Sagamore Highway Bridge
Cape Code Canal, Massachusetts

Gentlemen:

We are transmitting herewith, by messenger, the results of our inspection and evaluation of the subject structure as noted below:

"Sagamore Highway Bridge, 1976 Condition Report"	- 10 copies
Field Inspection Sketches (bound separately)	- 4 copies
Field Inspection Photographs (bound separately)	- 4 copies
Computer Output (bound separately)	- 2 copies
Computations (bound separately)	- 2 copies

We appreciate having had the opportunity to work on this project and wish to acknowledge the cooperation and aid received from Corps of Engineers personnel, in particular, Mr. D. Levin and Mr. R. Harrington.

Very truly yours,

AMMANN & WHITNEY

A. M. Custen

FKC:mrm

SAGAMORE HIGHWAY BRIDGE
1976 CONDITION REPORT

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I. INTRODUCTION

The Sagamore Highway Bridge which crosses the Cape Cod Canal in Southeast Massachusetts was constructed by the United States Government and opened to traffic in 1935. This bridge and the Bourne Highway Bridge to the west are the only two highway bridges connecting Cape Cod with the mainland (see Figure 1). The average daily traffic for the Sagamore Bridge in 1974 was 23,700 vehicles with peak traffic of 38,900 and 37,500 vehicles per day crossing in July and August, respectively.

The Sagamore Bridge consists of a 616-foot center span flanked on each side by a 396-foot span (see Figure 2). The bridge has a 40-foot roadway with a 6-foot 8-inch sidewalk running full length on the east side (see Figure 3 to 6 inclusive for details).

To insure continuous safe functioning of the bridge, the New England Division (NED) of the Corps of Engineers inspects the bridge routinely, at regular intervals. The most recent inspection was made in 1969 (see the 1969 Fay, Spofford and Thorndike Condition Report).

On August 4, 1975, the NED of the Corps of Engineers contracted with Ammann & Whitney for performance of an in-depth inspection, evaluation and condition report of the Sagamore Bridge. The scope of this work consisted of a detailed field inspection, complete stress analysis, condition evaluation, list of required repairs, conceptual remedial measures, special studies (such as maintenance procedures, paint system, etc.), cost estimates and a final report.

Ammann & Whitney initiated the field inspection on August 11, 1975. Because of severe winter weather, field work was discontinued on December 12, 1975. The field work was resumed on May 3, 1976 and was completed on June 26, 1976.

The theoretical stress analysis includes a computer analysis of the continuous spans with a mathematical model of 194 joints and 548 members. The structure was evaluated by using current design criteria and loadings, taking into account all effects the physical defects discovered during the inspection have on the bridge components.

The results of the in-depth field inspection, stress analysis, condition evaluation, list of required repairs, conceptual remedial measures, cost estimates and special studies are

summarized in this report. The detailed results of the field inspection and the Portland Cement Association's report on the concrete core tests are included in this report as Appendices I and II, respectively. The field inspection sketches with field notes (Appendix III), field inspection photographs (Appendix IV), computer output (Appendix V) and computations (Appendix VI) are bound under separate covers.

II. IN-DEPTH FIELD INSPECTION

A. Inspection Procedures

The inspection of the Sagamore Highway Bridge was performed with two to three teams - each team consisting of one Ammann & Whitney inspector and one rigger-painter from the firm of J.I. Hass, with one foreman supervising the activities of the rigger-painters of all three teams. The bridge was rigged by J.I. Hass prior to the start of inspection.

The rigging for the continuous spans consisted of longitudinal cables running under the deck the full length of the bridge. Two scaffolds were used, one on the east half and one on the west half of the bridge. The inspection of the sidewalk, deck, stringers, floor beams and panel points was performed from the scaffolds; and as the inspection progressed, the scaffolds were moved along the cables for the full length of the bay being inspected. For the side spans, two additional scaffolds were used on another set of cables running along the lower chord for inspection of the lower lateral bracing, lower chord and panel points.

The inspection started at the north end of the north side span, and proceeded southward. The inspection of the north side span was done using three teams - one inspecting the lower panel points and lateral bracing and the other two inspecting the top chord, upper panel points, floor beams, stringers, upper lateral bracing system and underside of deck. The arch span and south side span were inspected in a similar manner but with only two teams.

The inspection of the bearings was performed during the Corps of Engineers' annual maintenance, at which time, the bearings were opened, cleaned and greased.

The equipment used by each inspection team included a chipping hammer, scraper, 6-foot ruler, 6-inch scale and 1-inch micrometer. Two 35-mm cameras were used by the teams to record the condition of the various members. The crew from J.I. Hass assisted the Ammann & Whitney inspectors in chipping and scraping corroded areas as well as in obtaining access to all portions of the structure in the easiest and safest way.

At the end of the inspection, certain badly corroded areas were sandblasted and re-inspected to determine the extent of corrosion.

B. Inspection Items

To facilitate inspection, standard field inspection sketches were prepared in the office in advance so that the inspectors could make their comments thereon. These sketches, which were

based on the bridge contractor's original detailed shop drawings, cover all components of the bridge and are divided into the following nine types:

Sketch Type	Description	Comment
A	Truss	
B	Floor Beam and Stringer	
C	Deck, Sidewalk and Walkway	
D	Top Lateral Bracing	
E	Bottom Lateral Bracing	
F	Sway Bracing	
G	Wind Chord and Bracing	For Main Span
H	Bearings	
I	On-Deck Inspection	

The following items were inspected:

1. Steel Work:

   a. Member misalignment (report misalignment and size)

   b. All members, including inside and outside of laced box members - main material, stay plates, lacing, gussets, rivets, bolts, diaphragms.

      (1) Damages, kinks, bows, loss of section, loose rivets, missing rivets (report location, extent and size).

      (2) Cracks, checks, fractures, deformations (slippage) of multi-panel sections (report location, extent and size)(sandblast, if required).

      (3) Corrosion (report degree of corrosion by notations):

          C1 means under 1/32"
          C2 means 1/32" to 1/16"
          C3 means 1/16" to 1/8"
          C4 means 1/8" and over

For rivet heads:

R1 means under 25%
R2 means 25-50%
R3 means 50-75%
R4 means 75-100%
R5 means loose
R6 means missing.

For extent of corrosion:

E1 means less than 25%
E2 means 25-50%
E3 means 50-75%
E4 means 75-100%

c. Paint condition (report poor condition only).

2. Concrete Work:

a. Cracking:

Degree	Hair line	D1
	1/16"-1/8"	D2
	1/8"--1/4"	D3
	1/4" and over	D4

(Report location, extent and degree)(Sketch direction of crack).

b. Leaching, water leaking. (Report location and extent.)

c. Spalling, scaling (Report location, extent and thickness.)

d. Deterioration of Reinforcement (Report location, extent and degree.)

3. Miscellaneous Inspections:

Bearing Inspections

Expansion Joint Inspections

On-Deck Inspections (with concrete coring).

4. Field Inspection Photographs:

All field inspection photographs have been numbered in such a manner that they can be easily identified.

Example: A,S3,1-0,S,2

A - Sketch type that photo refers to - can be from A to I.

S3 - Indicates of what bridge (S for Sagamore, B for Bourne) photo was taken and in which span. In this case, photo was taken in Span No. 3 of Sagamore Bridge.

1-0 - Indicates in what bay within the span the photo was taken.

S - Direction you are looking as you view the photo (N - north, S - south, E - east, W - west).

2 - Number of photo taken within the bay.

C. Data Obtained

The detailed results of the field inspection are given in the Field Inspection Sketches (Appendix III), Field Inspection Photographs (Appendix IV) and detailed results of Field Inspection (Appendix I). The general data obtained is described below:

1. Superstructure:

The paint system of the Sagamore Bridge was found to be in poor condition with flaking, blistering and surface rusting on all members. Photos A,S1,13-14,DWN,14 and A,S1,12'-11',W,5 show this condition on the inside faces of one vertical member and on the surface of a panel point gusset, respectively. Proper sandblasting and cleaning are required to control this condition and prevent any further corrosion.

The truss members in all spans were found to be in good condition structurally with many members having corrosion of varying degree on the lacing. In Span S3, the heaviest deterioration occurred on Member L4W-U5W as can be seen in Photo A,S3,4-5,N,1 and on L8W-U9W shown in Photo A,S3,8-9,N,5. Other members were found to have knife-edged or ragged-edged lacing and are listed in the Detailed Results of Field Inspection (Appendix I). In Span S1, a common occurrence were deteriorated stay plates on both the upper and lower chords as can be seen in Photos A,S1,12-13,N,7 and A,S1,15'-14',S,4. The portals at the north and south ends are in good condition but with heavy blistering and layered rust on the inside surfaces of the vertical members with some corrosion on the laces.

The floor beams were also in good condition. Most corrosion reported occurred at either the east or west ends and consisted of deteriorated rivets as can be seen in Photo B,S3,3-4,S,4. Corrosion into the floor beam top flange along the sidewalk channel clip angles was common, as can be seen in Photo B,S1,13-14,N,5 and also under the existing telephone ducts which run the full length of the bridge. The outstanding legs of several floor beam stiffeners were found to be deteriorated as shown in Photo B,S2,2'-1',NW,4. The replacement of the old roadway joints with the newer watertight joints has made a difference in the condition of the floor beams below and all other structural steel under the expansion joints.

Corrosion on the stringers was limited to the bottom flanges of the outside stringers ST-1 and ST-9. Pitting into the top surface for the full length was common as can be seen in Photo B,S1,11-12,S2 and B,S1,14-15,N,9 and occasionally there was pitting into the base of the web as can be seen in Photo B,S1,13'-12', SW,1. There were also some stringers that were corroded between the stringer web and the connection angle at the floor beam, causing the angle to bow out slightly as can be seen in Photo B,S1,10'-9',SE,10. The corrosion to the outside stringers is caused partially by the drainage water from the weep holes of the steel buckle plates as well as water leaking from the sidewalk area.

Corrosion of sidewalk bracing was common and consisted of deteriorated gusset plates or bracing angles as can be seen in Photo C,S1,14-15,N,1. Many sidewalk channel clip angles were corroded on the top surface of the horizontal leg with corrosion into the sidewalk channel around the edge of the vertical leg.

In Span S1, the supporting angles for the catwalk were found to be badly deteriorated as can be seen in Photo C,S1,11-12,S,1. Some grating sections were found to be corroded enough to consider replacing them as can be seen in Photos C,S1,11-12,S,5 and C,S2,9'-8',N-DWN,4.

The major corrosion to the upper and lower lateral bracing systems in Spans S2 and S3 occurred at the gusset plates and the gusset plate rivets. Water laying on the top surfaces along with pigeon guano, which retains the water, has caused corrosion to the gussets as shown in Photos D,S2,5'-4',SW,1 and D,S2,2'-1', NE,2, of the upper lateral bracing. The upper and lower flanges, at the gussets, inside the back-to-back legs, were often filled with layered

rust and sometimes knife-edged as can be seen in Photo D,S3,1-2,SW,4. There are some deteriorated lacings which are in need of replacement in the struts at U10, U11 and U10' as well as some struts of the lower lateral bracing. The deterioration of the paint system can be seen in the upper lateral bracing where the final silver coat is being washed off, revealing the red lead coat underneath. This is caused by a thin final coat applied to the steel. Other badly corroded areas include the lacing of the vertical sway braces as well as the lacing and batten plates of the underdeck trusses at Panel Points 10 and 10'. The wind chord bracing was found to be badly deteriorated in some bays, directly under the catwalk where water is retained on the bottom flange for long periods of time. In some cases as in Bay 12'-11', the flange was deteriorated completely along the edge as can be seen in Photo G,S1,12'-11',DWN,12. These sections should be reinforced. The strut at Panel Point L10' has deteriorated lacing as well as rivets at both ends which should be replaced. At the north end of the west wind chord, a new shim plate which apparently was installed but never secured to the wind chord was found; this is shown in Photo G,S1,10'-9',S,8.

It was decided before the inspection to select certain areas on the bridge and have them sandblasted and re-inspected upon completion of the original inspection. The selected points were the result of conditions observed at these points during the field inspection and deemed to warrant a closer inspection.

At the Sagamore Bridge, the locations selected were:

a. NW side of floor beam and wind chord connection at Panel Point 10.

b. SW corner of floor beam at Panel Point 0, Span S3, Bay 0-1.

The conclusion drawn after the sandblasting of the above points was that it did not provide any additional useful information with respect to the extent of deterioration than was determined during the initial visual inspection.

2. Concrete Deck:

The condition of the underside of the concrete deck is fair with most of the deterioration occurring in the area under the center two lanes. The portion of the deck between Stringers 1 and 2, and 8 and 9, i.e., the outboard

stringers that were rebuilt using steel buckle plates for the bottom form, could not be inspected since the concrete was not visible. Consistent deterioration was found at the following locations:

a. Floor beam and stringer ends where the concrete haunches are cracked and could fall within a short time.

b. Between stringer areas with honeycombed concrete and exposed rebars.

c. Spalls along the sidewalk channel for almost its full length.

d. Localized areas with spalled concrete and exposed rebars.

A complete description of the field inspection, bay by bay, with pertinent photographs are included with this report (see Appendices I and IV).

The structural significance at each of the above-noted locations a to d, is as follows:

a. The loss of concrete at the haunches is not structurally significant.

b. The loss of concrete at bottom of deck is very important since the bottom rebars do not have any bond.

c. The loss of concrete is not structurally significant but repairs should be made to arrest further corrosion of bracing below.

d. The loss of concrete is quite important because bottom rebars do not have any bond and therefore, the particular section does not work as reinforced concrete slab.

The summation sheet of repairs recommended in this report is included in Section V.

3. On-Deck Inspection:

The railing of the Sagamore Bridge was found to be in good condition with only one vertical in need of replacement on the east side of Bay 0-1 in Span S3. All railing members have random surface rusting and are in need of

sandblasting and painting. The sidewalk was found to be in good condition with no apparent cracking or misalignment.

The light posts of the north and south approaches and north and south abutments have some deteriorated lacing and lacing rivets. Also, the southeast and southwest anchor bolt nuts for the light post at Panel Point 5 of Span S3 are 50 percent corroded, and 3 of the 4 anchor bolt nuts for the light post at Panel Point 5 of Span 2 are 50-75 percent corroded. On the center span, the nuts on the cable clamp for the light fixture at Panel Point 16 on the west side and at Panel Point 13' on the west side are deteriorated and should be replaced.

The asphalt paving on the deck has cracks in its surface for the entire length of the bridge and these should be sealed to prevent any drainage water from seeping into the concrete deck. Also, some slight unravelling of the asphalt has occurred in all three spans along the east curb in the northbound lane. In addition, there are some scupper covers which are partially blocked by debris and should be cleaned.

4. Substructure:

The concrete areas around the bridge bearing on all piers were found to be in good condition. There were no significant spalls or cracks found on any piers. At the north abutment, the southeast corner of the east bearing area was slightly cracked and had a hollow sound when hit with a hammer.

III. STRESS ANALYSIS

A. Loadings

All dead loads (D) were computed from the original construction shop drawings, with all subsequent reconstruction and modifications taken into account. The live load (L), impact load (I), wind load (W), longitudinal force (LF) and wind on live load (WL) were based on the latest American Association of State Highway and Transportation Officials' "Standard Specifications for Highway Bridges". In addition, torsion due to eccentric live loads was also considered.

Four groups representing various combinations of loads were used in the stress analysis. The allowable unit stresses for each of the groups are as follows:

		Percentage of Unit Stress
Group I	D + L + L	100%
Group II	D + W	125%
Group III	Group I + LF + 30% + WL	125%
Group IV	D + Torsion	100%

B. Computer Analysis and Design

In the computer analysis, a mathematical model of the continuous spans consisting of 194 joints and 548 members was used (see Figure 7). The runs for the basic loads were performed at the McDonnell Douglas Automation Company's facility in St. Louis, Missouri. A combination program which was written especially for this project combines the basic loads into designated groups, selects the governing case and compares the maximum loads against the allowable loads. The combination runs were made with Ammann & Whitney's in-house computer. The computer output is contained in Appendix V.

The maximum loads versus the allowable loads for the continuous spans are summarized in Table A. The member numbers for the continuous spans are given in Figure 7.

The governing load cases (1 through 11) in Table A are defined as follows:

MAIN SPAN TRUSS

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
BOTTOM CHORD								
1	-634	1	-893					
2	-635	1	-893					
3	-1083	1	-1634					
4	-1083	1	-1634					
5	-200	5	-1896		640	1	1865	
6	-199	5	-1896		641	1	1865	
7					1987	1	2202	
8					1989	1	2202	
9					2782	1	2652	4.9
10					3892	1	4896	
11					3847	1	4896	
12					1446	1	2321	
13					1317	1	1891	
14	-1332	1	-1916					
15	-1306	1	-1916					
16	-2600	1	-3166					
17	-2576	1	-3166					
18	-2577	1	-3166					
19	-2604	1	-3166					
20	-1310	1	-1916					
21	-1338	1	-1916					
22					1307	1	1891	
23					1430	1	2321	
24					3846	1	4896	
25					3851	1	4896	
26					2783	1	2652	4.9
27					1989	1	2202	
28					1987	1	2202	
29	-166	3	-1896		641	1	1865	
30	-186	3	-1896		639	1	1865	
31	-1084	1	-1634					
32	-1084	1	-1634					
33	-636	1	-893					
34	-635	1	-893					

MAIN SPAN TRUSS

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
TOP CHORD								
35	-46	7	-679		47	6	686	
36					1024	1	1435	
37					1024	1	1435	
38	-43	4	-1557		801	1	1529	
39	-42	4	-1557		800	1	1529	
40	-1408	1	-2015					
41	-1441	1	-2015					
42	-2607	1	-2485	4.9				
43	-2692	1	-2485	8.3				
44	-2399	1	-2178	10.1				
45	-2364	1	-2178	8.5				
46	-197	1	-1470		304	2	1424	
47	-211	3	-1470		320	2	1429	
48					2115	1	2361	
49					2089	1	2364	
50					2763	1	2846	
51					2762	1	2846	
52					2086	1	2364	
53					2111	1	2361	
54	-226	3	-1470		303	2	1429	
55	-210	3	-1470		298	1	1424	
56	-2372	1	-2178	8.9				
57	-2408	1	-2178	10.5				
58	-2701	1	-2485	10.8				
59	-2614	1	-2485	10.5				
60	-1445	1	-2015					
61	-1411	1	-2015					
62	-29	3	-1557		799	1	1529	
63	-23	4	-1557		801	1	1529	
64					1023	1	1435	
65					1023	1	1435	
66	-44	7	-679		45	6	686	

MAIN SPAN TRUSS

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
DIAGONAL								
67					945	1	1227	
68	-538	1	-893					
69	-195	2	-745		138	1	675	
70					580	1	785	
71	-1027	1	-1042					
72					1212	1	1257	
73	-1243	1	-1502					
74					966	1	1398	
75	-901	1	-1198					
76	-1081	1	-1166					
77					2529	1	3394	
78	-1556	1	-1666					
79					1944	1	2349	
80	-1198	1	-1285					
81					949	1	1233	
82	-422	1	-668					
83	-415	1	-668					
84					932	1	1233	
85	-1187	1	-1285					
86					1904	1	2349	
87	-1543	1	-1666					
88					2444	1	3394	
89	-1069	1	-1166					
90	-922	1	-1198					
91					986	1	1398	
92	-1259	1	-1502					
93					1223	1	1257	
94	-1036	1	-1042					
95					586	1	785	
96	-201	1	-745		131	1	675	
97	-531	1	-893					
98					931	1	1227	

MAIN SPAN TRUSS

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
VERTICAL								
99					157	1	388	
100	-16	11	-281					
101					286	1	412	
102	-21	11	-281					
103					285	1	419	
104	-31	11	-336					
105					208	1	847	
106	-140	1	-846					
107	-47	7	-1332					
108	-319	1	-1332					
109	-19	2	-745		118	1	733	
110	-199	1	-745					
111					1842	1	3845	
112					1572	1	4080	
113					1545	1	4126	
114					385	1	795	
115					116	1	636	
116	-145	1	-399		30	5	329	
117					47	1	345	
118	-411	1	-545					
119	-120	1	-285					
120	-593	1	-760					
121	-149	1	-285					
122	-593	1	-760					
123	-120	1	-285					
124	-411	1	-545					
125					47	1	345	
126	-145	1	-399		21	3	329	
127					385	1	636	
128					116	1	795	
129					1842	1	4126	
130					1572	1	4080	
131					1545	1	3849	
132	-20	2	-745		118	1	793	
133	-199	1	-745					

MAIN SPAN TRUSS

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
134	-47	7	-1332					
135	-319	1	-1332					
136					208	1	912	
137	-140	1	-846					
138	-30	11	-336					
139					285	1	419	
140	-21	1	-281					
141					286	1	412	
142	-16	11	-281					
143					157	1	388	

Note: Forces for members 144 thru 286 are similar to forces for members 1 thru 143.

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
HORIZONTAL STRUT								
287	0	6	-416		0	0	338	
288	-9	11	-416		9	10	338	
289	-8	11	-416		8	10	338	
290	-8	11	-416		8	10	338	
291	-4	11	-416		4	10	338	
292	-1	11	-416		1	10	338	
293	-5	10	-416		5	11	338	
294	-9	10	-416		8	11	338	
295	-15	10	-416		14	11	338	
296	0	6	-1248		0	0	1014	
297	-7	10	-416		7	11	338	
298	-5	10	-240		4	11	233	
299	-2	11	-170		4	6	147	
300	-43	7	-416		48	6	379	
301	-43	6	-416		48	7	379	
302	-4	11	-416		5	10	338	
303	-5	11	-416		5	10	338	
304	-6	11	-416		7	10	338	
305	-6	11	-416		7	10	338	
306	-6	11	-416		7	10	338	
307	-5	11	-416		5	10	338	
308	-4	11	-416		5	10	338	
309	-42	7	-416		47	6	379	
310	-42	6	-416		47	7	379	
311	-2	11	-170		4	6	147	
312	-5	10	-240		4	11	233	
313	-7	10	-416		7	11	338	
314	0	6	-1248		0	0	1014	
315	-15	10	-416		14	11	338	
316	-9	10	-416		8	11	338	
317	-5	10	-416		5	11	338	
318	-1	11	-416		1	10	338	
319	-4	11	-416		4	10	338	
320	-8	11	-416		8	10	338	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
321	-8	11	-416		8	10	338	
322	-9	11	-416		9	10	338	
323	0	6	-416		0	0	338	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
DIAGONAL BOTTOM BRACING								
324	-17	10	-170		16	11	115	
325	-6	7	-170		6	6	115	
326	-15	10	-170		14	11	115	
327	-4	11	-170		4	10	115	
328	-17	7	-170		18	6	115	
329	-17	6	-170		18	7	115	
330	-23	7	-170		24	6	115	
331	-23	6	-170		24	7	115	
332	-36	7	-170		37	6	115	
333	-36	6	-170		37	7	115	
334	-58	7	-211		59	6	163	
335	-58	6	-211		59	7	163	
336	-96	7	-211		97	6	163	
337	-96	6	-211		97	7	163	
338	-138	7	-277		140	6	214	
339	-138	6	-277		140	7	214	
340	-184	7	-309		186	6	240	
341	-184	6	-309		186	7	240	
342	-249	6	-402		251	7	269	
343	-249	7	-402		251	6	269	
344	-95	6	-170		104	7	139	
345	-95	7	-170		104	6	139	
346	-2	11	-170		6	7	139	
347	-98	6	-170		98	7	139	
348	-98	7	-170		98	6	139	
349	-2	11	-170		6	6	139	
350	-23	6	-170		24	7	112	
351	-23	7	-170		24	6	112	
352	-18	6	-170		20	7	112	
353	-18	7	-170		20	6	112	
354	-7	6	-170		8	7	112	
355	-7	7	-170		8	6	112	
356	-5	10	-170		5	7	112	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
357	-4	10	-170		5	6	112	
358	-4	10	-170		4	6	112	
359	-5	10	-170		4	7	112	
360	-7	7	-170		8	6	112	
361	-7	6	-170		8	7	112	
362	-18	7	-170		19	6	112	
363	-18	6	-170		19	7	112	
364	-22	7	-170		24	6	112	
365	-22	6	-170		24	7	112	
366	-2	11	-170		6	7	139	
367	-96	6	-170		97	7	139	
368	-96	7	-170		97	6	139	
369	-2	11	-170		6	6	139	
370	-93	6	-170		102	7	139	
371	-93	7	-170		102	6	139	
372	-247	7	-402		249	6	269	
373	-247	6	-402		249	7	269	
374	-189	6	-309		191	7	240	
375	-189	7	-309		191	6	240	
376	-143	6	-277		144	7	214	
377	-143	7	-277		144	6	214	
378	-101	6	-211		102	7	163	
379	-101	7	-211		102	6	163	
380	-63	6	-211		64	7	163	
381	-63	7	-211		64	6	163	
382	-38	6	-170		39	7	115	
383	-38	7	-170		39	6	115	
384	-25	6	-170		26	7	115	
385	-25	7	-170		26	6	115	
386	-18	6	-170		19	7	115	
387	-18	7	-170		19	6	115	
388	-5	11	-170		6	10	115	
389	-17	10	-170		15	11	115	
390	-5	11	-170		5	10	115	
391	-18	10	-170		17	11	115	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
FLOOR BEAM								
392	-2	10	-1066		2	11	1106	
393	-5	10	-1066		6	6	1106	
394	-11	10	-1066		10	11	1106	
395	-9	10	-1066		9	11	1106	
396	-8	10	-1066		7	11	1106	
397	-4	10	-1066		6	6	1106	
398	-1	10	-1066		5	6	1106	
399	-1	11	-1066		9	6	1106	
400	0	11	-1066		4	6	1106	
401	-4	10	-1066		4	11	1106	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
STRUT TOP BRACING								
402	-70	6	-1066		1	10	1106	
403	-13	11	-416		14	10	338	
404	-7	11	-416		7	10	338	
405	-1	11	-416		2	10	338	
406	-3	10	-416		3	6	338	
407	-7	10	-416		7	11	338	
408	-7	10	-416		7	11	338	
409	-8	10	-416		7	11	338	
410	-7	10	-416		7	11	338	
411	-7	10	-416		7	11	338	
412	-3	10	-416		3	6	338	
413	-1	11	-416		2	10	338	
414	-7	11	-416		7	10	338	
415	-13	11	-416		14	10	338	
416	-70	6	-1066		1	10	1106	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
FLOOR BEAM								
417	-4	10	-1066		4	11	1106	
418	0	11	-1066		4	6	1106	
419	-1	11	-1066		9	6	1106	
420	-1	10	-1066		5	6	1106	
421	-4	10	-1066		6	6	1106	
422	-8	10	-1066		7	11	1106	
423	-9	10	-1066		9	11	1106	
424	-11	10	-1066		10	11	1106	
425	-5	10	-1066		6	6	1106	
426	-2	10	-1066		2	11	1106	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
DIAGONAL TOP BRACING								
427	-88	7	-170		88	6	115	
428	-88	6	-170		88	7	115	
429	-66	7	-170		66	6	115	
430	-66	6	-170		66	7	115	
431	-49	7	-170		50	6	115	
432	-49	6	-170		50	7	115	
433	-27	7	-170		27	6	115	
434	-27	6	-170		27	7	115	
435	-8	7	-170		9	6	115	
436	-11	11	-170		12	10	115	
437	-107	7	-170		108	6	107	.9
438	-107	6	-170		108	7	107	.9
439	-110	7	-170		111	6	107	3.7
440	-110	6	-170		111	7	107	3.7
441	-77	7	-170		78	6	107	
442	-77	6	-170		78	7	107	
443	-61	7	-170		62	6	113	
444	-61	6	-170		62	7	113	
445	-40	7	-170		41	6	113	
446	-40	6	-170		41	7	113	
447	-27	7	-170		28	6	113	
448	-27	6	-170		28	7	113	
449	-6	7	-170		7	6	113	
450	-6	6	-170		7	7	113	
451	-5	6	-170		6	7	113	
452	-5	11	-170		6	6	113	
453	-26	6	-170		27	7	113	
454	-26	7	-170		27	6	113	
455	-39	6	-170		40	7	113	
456	-39	7	-170		40	6	113	
457	-60	6	-170		61	7	113	
458	-60	7	-170		61	6	113	
459	-76	6	-170		77	7	107	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
460	-76	7	-170		77	6	107	
461	-109	6	-170		110	7	107	2.8
462	-109	7	-170		110	6	107	2.8
463	-107	6	-170		108	7	107	0.9
464	-107	7	-170		108	6	107	0.9
465	-9	11	-170		10	10	115	
466	-5	7	-170		6	6	115	
467	-24	6	-170		25	7	115	
468	-24	7	-170		25	6	115	
469	-47	6	-170		47	7	115	
470	-47	7	-170		47	6	115	
471	-63	6	-170		63	7	115	
472	-63	7	-170		63	6	115	
473	-85	6	-170		85	7	115	
474	-85	7	-170		85	6	115	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
DIAGONAL SWAY BRACING								
475	-97	6	-170		97	7	108	
476	-97	7	-170		97	6	108	
477	-12	6	-170		13	7	116	
478	-12	7	-170		13	6	116	
479	-21	6	-170		22	7	114	
480	-21	7	-170		22	6	114	
481	-32	6	-170		33	7	109	
482	-32	7	-170		33	6	109	
483	-25	6	-170		27	7	104	
484	-25	7	-170		27	6	104	
485	-147	6	-211		147	7	123	
486	-147	7	-211		147	6	123	
487	-108	6	-341		99	7	325	
488	-108	7	-341		99	6	325	
489	-107	6	-341		98	7	325	
490	-107	7	-341		98	6	325	
491	-147	6	-211		147	7	123	
492	-147	7	-211		147	6	123	
493	-25	6	-170		27	7	104	
494	-25	7	-170		27	6	104	
495	-32	6	-170		33	7	109	
496	-32	7	-170		33	6	109	
497	-21	6	-170		22	7	114	
498	-21	7	-170		22	6	114	
499	-15	6	-170		16	7	116	
500	-15	7	-170		16	6	116	
501	-94	7	-170		95	7	108	
502	-94	7	-170		95	6	108	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
VERTICAL PORTAL FRAME								
503	-125	7	-610		139	6	614	
504	-115	7	-610		128	6	614	
505	-93	7	-610		107	6	614	
506	-62	7	-610		76	6	614	
507	-62	6	-610		76	7	614	
508	-93	6	-610		107	7	614	
509	-115	6	-610		128	7	614	
510	-125	6	-610		139	7	614	
511	-30	6	-379		30	7	397	
512	-8	6	-379		8	7	397	
513	-7	6	-379		7	7	397	
514	0	11	-1957		0	10	2071	
515	-7	7	-379		7	6	397	
516	-8	7	-379		8	6	397	
517	-30	7	-379		30	6	397	
518	-159	6	-610		160	7	614	
519	-136	6	-610		137	7	614	
520	-110	6	-610		111	7	614	
521	-73	6	-610		74	7	614	
522	-73	7	-610		74	6	614	
523	-110	7	-610		111	6	614	
524	-136	7	-610		137	6	614	
525	-159	7	-610		160	6	614	
526	-125	7	-610		138	6	614	
527	-115	7	-610		128	6	614	
528	-93	7	-610		106	6	614	
529	-62	7	-610		75	6	614	
530	-62	6	-610		75	7	614	
531	-93	6	-610		106	7	614	
532	-115	6	-610		128	7	614	
533	-125	6	-610		138	7	614	
534	-30	6	-379		30	7	397	
535	-8	6	-379		8	7	397	

MAIN SPAN BRACING

Table A - Main Span Member Loads

Member	Tension Forces (Kips)				Compression Forces (Kips)			
	Axial Max.	Case	Axial Allow.	% Overstress	Axial Max.	Case	Axial Allow.	% Overstress
536	-7	6	-379		7	7	397	
537	0	11	-1957		0	10	2071	
538	-7	7	-379		7	6	397	
539	-8	7	-379		8	6	397	
540	-30	7	-379		30	6	397	
541	-158	6	-610		159	7	614	
542	-135	6	-610		136	7	614	
543	-109	6	-610		110	7	614	
544	-72	6	-610		73	7	614	
545	-72	7	-610		73	6	614	
546	-109	7	-610		110	6	614	
547	-135	7	-610		136	6	614	
548	-158	7	-610		159	6	614	

Loading Combination Case Members

Case	Group	Forces
1	I	D + L + I at 100%
2	III	Group I + LF + 0.3W + WL at 125% Transverse wind from east
3	III	Group I + LF + 0.3W + WL at 125% Transverse wind from west
4	III	Group I + LF + 0.3W + WL at 125% Longitudinal wind from south
5	III	Group I + LF + 0.3W + WL at 125% Longitudinal wind from north
6	II	D + W at 125% - Transverse wind from east
7	II	D + W at 125% - Transverse wind from west
8	II	D + W at 125% - Longitudinal wind from south
9	II	D + W at 125% - Longitudinal wind from north
10	IV	D + Torsion at 100% - Traffic at east lanes
11	IV	D + Torsion at 100% - Traffic at west lanes

The "% overstress" columns in Table A indicate that most of the members are not overstressed. For the few members which are overstressed, the percentages of overstress are small. The theoretical stress analysis for the floor beams, stringers and deck slab also shows no overstress (see computations in Appendix VI). However, if loss of material of the component members uncovered during the inspection and modern detail criteria and practice are taken into consideration, various parts of the structure will require repair work and/or remedial measures (see Sections IV and V for compatibility between modern loadings and current code requirements).

IV. CONDITION EVALUATION

A. Steel Superstructure

The condition of the Sagamore Bridge has deteriorated further since the 1969 inspection. On the superstructure, the incidence and amount of corrosion have increased, so that many stay plates and lacing should be replaced. The inspection also showed corrosions at the stringer webs and sidewalk channel support connections. The general condition of the paint is poor. Inadequate cleaning of the steel prior to painting is evident, as noted by the large number of blisters with rusting underneath.

For the condition of the cable hangers and hanger connections, see Ammann & Whitney reports entitled, "Condition Report Covering the Hanger Cables" dated February 1974 and "Hanger Cables 1976 Condition Report".

B. Deck Slab

The number of spalls in the concrete deck have also increased since the last inspection; but the location and type of spalling are basically the same. In areas where spalls were patched, the patches are now beginning to fall out. It is obvious that this method of repair is a temporary rather than a permanent measure.

The general crack pattern at the underside of the deck slab is shown in Figure 8. Section AA indicates concrete spalling along the top flange of the floor beam; Section BB indicates concrete spalling along the top flange of the stringer; and Section CC indicates concrete spalling between stringers, with the lower portion of the trussed rebars exposed. The spalling presented in Section CC is the most serious of the three types shown, with respect to structural integrity. For this type of spall, with the maximum positive bending moment occurring at the midspan between stringers (compression at the top and tension at the bottom of the slab), the slab cannot act as a reinforced concrete structure since the bottom reinforcing is not bonded in the concrete. Further, at the stringer flanges where maximum negative moment occurs under wheel loads (tension at top and compression at bottom of the slab), there is no concrete at the slab bottom to resist the compression load. However, since trussed rebars were used in the original slab construction (as opposed to the reinforcing bars used today), the wheel loads at these locations are carried by the truss action of these trussed rebars.

It should be pointed out that the deck slab between the exterior stringer and the first interior stringer on both sides of the roadway was rebuilt several years ago by using buckle-plate

construction. Therefore, the condition of the deck slab at these locations could not be visually inspected. Since the top surface of the deck has a bituminous wearing surface, the condition of the deck slab could not be visually inspected from the top either.

To properly evaluate the concrete condition of the deck slab, it was decided to take six 4-inch diameter cores for compressive strength tests, petrographic tests and chloride tests. Figure 9 shows the locations of these six core tests. The tests were performed by the Portland Cement Association. Details of the test results are reported in Appendix II and are summarized in Table B.

TABLE B

Core Test Results

Core No.	Condition	Compressive Strength (psi)	Pounds Chloride/Yd^3 Concrete	
			Top	Bottom
S1	Some honeycomb	-	0.07	<0.07
S2	Very good	8,140	<0.07	<0.07
S3	Relatively good	3,040	<0.07	0.64
S4	Much honeycomb	-	<0.07	0.32
S5	Poorly compacted	-	0.08	0.08
S6	Very bad honeycomb	-	0.08	2.51

The test results indicate that the lightweight concrete was generally very poorly compacted, since several cores showed large amounts of honeycombing.

Additionally, the chloride content in at least one core was excessive. The measured values in Core S6 were 2.51 pounds per cubic yard; whereas the generally acceptable limit of chlorine content is 1 to 1.3 pounds per cubic yard. This excessively high chloride content accelerates the deterioration of both the concrete and the rebars.

The effect on the stress in the concrete slab due to the proposed increase in allowable (legal) loads on Massachusetts highways was also studied. Although the 1975 Massachusetts House Bill No. 5465 does not specify actual wheel loads and axle spacings, by using typical load types from AASHTO's (American Association of State Highway and Transportation Officials) 1974 "Geometric Highway Design - Urban" and "Manual for Maintenance Inspection of Bridges", it was estimated that the increase in stress will be approximately 10 percent. Studies indicate that if the deck slab concrete is sound, this increase will not cause any overstress in the deck because of the conservative assumptions used in the original design. However, for areas where large portions of the bottom of the deck is spalled with exposed trussed rebars, the stresses in these rebars will increase from 53 percent overstress on the basis of present AASHTO wheel loads to about 69 percent overstress for the new loads. It is evident that even under present AASHTO requirements, the trussed rebar in such areas is highly overstressed, and this condition will be further aggravated under the proposed new loadings. Accordingly, as noted in Section V, it is recommended that immediate remedial work be carried out in such areas.

C. Bearings and Expansion Joints

All truss bearings were inspected and found to be in good condition and functioning properly, with the exception of anchor bolts at some locations which were bent. These anchor bolts should be repaired (see Section VI). The position of all the bearings at the time of inspection, with recorded ambient temperature, is shown in Figure 10. A study of the movements of the bearings at extreme temperature conditions, as given by the AASHTO specifications, was made and found to be satisfactory.

D. Current Maintenance Procedures and Possible Improvements

The importance of a proper bridge maintenance program and the implementation of such a program cannot be overemphasized. It is understood from the Corps of Engineers that the maintenance program now in force consists of the following:

Annual Maintenance

1. Cleaning, greasing and aligning roller bearings.
2. Patching concrete curbs and sidewalks.
3. Patching bituminous concrete roadway paving.
4. Spot painting of structural steel.
5. Repairing expansion joints.

From observation and experience gained during the field inspection, it is recommended that the following items be added to the program:

I. On Deck

1. Check roadway wearing surface for cracks. All cracks should be sealed.

2. Check all roadway drains to make sure they stay free of debris, especially during periods when cinders and sand are used during snow, or when the roadway has iced up.

3. Check joint openings at roadway expansion joints to make sure they are working properly. Remove debris that might obstruct moving parts.

II. Substructures

Tops of concrete piers and abutments should be checked for cracking. All cracks should be sealed.

III. Superstructure

A bi-annual check should be made of the areas behind the suspender ropes at the wind chord connection.

A build-up of trapped sand, which in turn retains moisture, leads to rusting of rivet heads and suspenders at these locations. All such areas should be washed clean with fresh water.

An attempt should be made to control the build-up of pigeon guano on bridge members. This unsightly guano holds moisture and accelerates deterioration of the paint system and could be a hazard to the inspection crew's safety.

Where surface rust is discovered on steel members, such rust should be completely removed and the member should be primed, finished, and painted. Painting over existing rust can only lead to more extensive repairs at a later date.

The vertical ladders at the exterior of the abutments and at the main piers of Span 1 leading to the catwalk below the bridge deck should be checked regularly for rusted support brackets and ladder rungs.

E. Evaluation of U.I. Paint System

To be sent as supplement (as per 4 November 1976 phone conversation between N.E.D. and Ammann & Whitney)

V. REMEDIAL WORK

A. Required Remedial Work

The remedial work required to correct the physical defects discovered during the inspection, and the recommended modifications required to meet current bridge design criteria and loadings, are listed in detail in Table C entitled "Summary of Recommended Repairs" included in this section.

Priorities have been assigned to all remedial work, based on the following criteria:

1. Highest priority has been assigned where remedial work is required to insure structural integrity.

2. Repairs to correct deterioration which could affect the structural integrity of the structure in the future.

3. Maintenance repairs to those items where structural adequacy has not been affected, but where aesthetics is important.

4. Defects which do not require remedial work at this time.

The major components requiring repair as well as recommended remedial procedures are briefly outlined below:

1. Steel Superstructure

   a. Stringers

      Some stringer webs are corroded at the connections. It is recommended that the connections between the stringers and floor beams be reinforced by using splice plates and high-strength bolts. The repair method is shown schematically in Figure 11.

   b. Sidewalk Channel Support

      The brackets which support the sidewalk channels at the expansion ends of the arch are badly corroded. In order to maintain the safety of the sidewalk, these brackets should be repaired as soon as possible. In Figure 12, Sections AA through FF show a schematic repair method; Sections MM and NN show a method of temporary support for the channels.

c. Anchor Bolt Repairs

Some bearing anchor bolts are bent. It is possible that these bent bolts could restrain the free movement of the structure due to temperature changes. At such locations, anchor bolts may be modified as shown in Figure 13, to permit freedom of motion.

d. Other Repairs

Table C lists in detail all components requiring repair as a result of corrosion. These items include main material, gusset plates, stay plates, lacing, rivets, etc.

2. Concrete Deck Slab

a. High Priority Repair

As mentioned in Section IV, where large areas of concrete have spalled on the underside of the deck, such spalling will cause serious overstress in the deck and should be repaired immediately.

b. Complete Deck Replacement

In Section IV, it is noted that the deck slab concrete is contaminated by a high percentage of chlorides resulting from the use of salt in snow removal operations. More than 5 percent of the deck area is visibly spalled. Some of the concrete cylinder tests indicated that the condition of the deck concrete is poor (see Table B). Accordingly, it is recommended that the entire deck be replaced in the near future. A preliminary cost estimate for demolition of the existing deck and construction of a new deck has been included in the Repair Cost Estimates.

3. Repairs at Deck Level and Above

a. Deck:

Open cracks in the asphaltic concrete wearing surface should be filled with tar to prevent water from making its way into the top of the reinforced concrete deck.

b. Railing:

Where rusted surfaces are found on railing members, they should be sandblasted, primed and given a finish coat.

Where vertical bars are badly rusted and heavy metal loss has taken place, the bars should be replaced.

c. Light Standards:

(1) At the continuous spans, the fixtures noted as having rusted clamp bolts should have the nuts and bolts replaced with new galvanized nuts and bolts. The members making up the light fixtures should be cleaned free of rust spots; those spots should be prime painted and then given a finish coat.

(2) The light standards on the side spans require cleaning of rust spots and then given a prime and finish coat of paint.

The anchor bolts of the light standards which have nuts that are corroded 50 percent or more should have these nuts replaced. In addition, missing inspection plate bolts at the base of the light standards should also be replaced.

(3) At the abutment lighting, there are missing rivets and rusted lacing members that require replacement. The fixtures should be sandblasted and then given a prime and finish coat of paint.

B. Cost Estimates

1. Estimate of Cost for Repair of Steelwork, including railings, patching of concrete deck and miscellaneous maintenance work (see detailed list, Table C).

Based on a time-and-motion study to perform the necessary work and based on current labor and material prices for the area, total costs are as follows:

Sagamore Bridge	$700,000

2. Estimate of Cost for Replacement of Concrete Roadway Deck, including sidewalks.

Based on recent bid prices for similar work, total costs are as follows:

Sagamore Bridge	$2,750,000.

TABLE C

Summary of Recommended Repairs

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
A - Truss Members Span S3			Riv. Lacing Plate	See Cost Estimates in Section V	
L2W - U2W	Repair 15 deteriorated laces	1	(15)		I-1
L3E - L4E	Replace 6 lower lacing rivets	1	(6)		I-1
L4E - U5E	Replace 2 deteriorated laces	1	(2)		I-1
L4W - U5W	Replace 28 deteriorated laces	1	(28)		I-1
L5W - U5W	Repair 12 deteriorated laces	1	(12)		I-1
L5E - L6E	Replace 1 lower flange rivet at north end	2	(1)		I-2
L6E - L7E	Replace 3 lower flange rivets at south end	2	3		I-2
L5W-L6W	Replace 7 lower flange rivets at L6W	1	7		I-2
L6W - U6W	Replace 4 deteriorated rivets at U6W	2	4		I-2
L7W - L8W	Replace 2 upper stay plate rivets	2	2		I-2
U8E - U9E	Replace 9 deteriorated laces	2	(9)		I-3
L8W - L9W	Replace deteriorated south upper stay plate	2	1		I-3
U8W - U9W	Replace 9 deteriorated laces	2	(9)		I-3
L8W - U9W	Replace 32 deteriorated laces	1	(32)		I-3
L9W - L10W	Replace 2 lower connection angle rivets	1	2		I-3
Span S1					
L10E - L11E	Replace deteriorated south upper stay plate	2	1		I-3
U9W - U10W	Replace 18 deteriorated laces	2	(18)		I-9
L10W - U11W	Replace deteriorated south lower stay plate	2			I-9
L11E - L12E	Replace deteriorated south lower stay plate	2	1		I-9
U11E - U12E	Replace 5 deteriorated laces	2	(5)		I-9
U12E - U13E	Replace 10 deteriorated laces	2	(10)		I-8
L12E - U13E	Replace deteriorated south upper stay plate	2	1		I-8
L11E - L12E	Replace deteriorated north upper and lower stay plate	2	1		I-8

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			RA. LAC PL.		
U10W - U11W	Replace 2 deteriorated laces	2	2		I-8
PP - L11W	Replace 2 cable hanger rivets	2	2		I-8
U11W - U12W	Replace 8 deteriorated laces	2	8		I-8
L11W - L12W	Replace 3 deteriorated lacing rivets	2	3		I-8
L12E - U13E	Replace deteriorated north upper stay plate	2	1		I-8
	Replace 3 upper connection angles rivets	2	3		I-8
	Replace deteriorated north upper and lower stay plates	2	2		I-8
U13E - U14E	Replace deteriorated south stay plate	2	1		I-7
PP - L13E	Replace 3 cable hanger rivets	2	3		I-6
L12W - U13W	Replace deteriorated north lower stay plate	2	1		I-6
U13W - L14W	Replace 15 deteriorated lower lace rivets	2	15		I-6
L14W - U15W	Replace 5 deteriorated lower lace rivets	2	5		I-5
U14E - U15E	Replace deteriorated north stay plate	2	1		I-4
L15E - L16E	Replace deteriorated north upper and lower stay plate	2	2		I-4
PP - L16E	Replace 3 cable hanger rivets	2	3		I-4
L16E - L15'E	Replace deteriorated south upper and lower stay plates	2	2		I-4
U14W - U15W	Replace deteriorated north stay plate	2	1		I-4
L16W - L15'W	Replace deteriorated south lower stay plate	2	1		I-10
L16E - L15'E	Replace north upper and lower stay plates	2	2		I-5
L15'E - L14'E	Replace south lower stay plate	2	1		I-5
	Replace north upper and lower stay plates	1	2		
L16W - L15'W	Replace deteriorated north lower stay plate	2	1		I-10
U14'E - U13'E	Replace deteriorated south stay plate	2	1		I-10
U13'E - U12'E	Replace 6 deteriorated laces	1	6		I-10
PP - L13'E	Replace 1 cable hanger rivet	2	1		I-10

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Rvt Lac PL		
U15'W - U14'W	Replace deteriorated north stay plate	2			I-10
L15'W - L14'W	Replace deteriorated north upper and lower stay plate	2	2		I-10
U14'W - U13'W	Replace deteriorated north stay plate	2	1		I-10
U13'W - L12'W	Replace deteriorated south lower stay plate	2	1		I-11
U11'E - L10'E	Replace 6 deteriorated lacing rivets	2	6		I-11
L10'E - L9'E	Replace deteriorated south upper stay plate	2	1		I-11
L10'E - L9'E	Replace 5 deteriorated lacing rivets	2	5		I-12
L11'W - L10'W	Replace deteriorated north upper and lower stay plates	2	2		I-12
Span S2					
U9'E - U8'E	Replace 7 deteriorated laces	1	(7)		I-12
U9'E - L8'E	Replace 9 deteriorated laces	1	(9)		I-12
U9'W - U8'W	Replace 8 deteriorated laces	1	8		I-12
PP - U9'W	Repair deteriorated vertical stiffener	2	1		I-12
U9'W - L8'W	Replace 35 deteriorated laces	2	35		I-12
U9'W - L8'W	Replace deteriorated north upper stay plate	2	1		I-12
7 6 L8'E - L7'E	Replace 3 lower flange rivets at north end	2	3		I-12
6 5 L7'E - L6'E	Replace 3 lower flange rivets at north end	2	3		I-13
	Replace 6 lower flange rivets at south end	2	6		I-13
L1'W - L0'W	Replace 2 deteriorated laces	1	2		I-19
L0'W - U0'W	Replace 3 deteriorated lacing rivets	2	2		I-19

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
B - Floor Beams					
Span S3					
FB 1 N	Replace 3 lower flange rivets at east end	2	3		I-20
	Replace 8 lower flange rivets at west end	1	(8)		I-20
FB 2 S	Replace 1 lower flange rivet at east end	2	1		I-20
FB 2 N	Replace 2 lower flange rivets at east end	2	2		I-20
	Replace 7 lower flange rivets at west end	1	(7)		I-20
FB 3 S	Replace 2 lower flange rivets at east end	2	2		I-20
FB 3 N	Replace 7 lower flange rivets at west end	1	(7)		I-20
FB 4 N	Replace 3 lower flange rivets at east end	2	3		I-20
	Replace 4 clip angle rivets at east end	2	4		I-20
FB 5 S	Replace 3 lower flange rivets at west end	1	(3)		I-20
	Replace 2 clip angle rivets at east end	2	2		I-20
FB 5 N	Replace 16 lower flange rivets at west end	1	(16)		I-21
	Replace 4 lower flange rivets at east end	1	(4)		I-21
FB 6 S	Replace 2 clip angle rivets at east end	1	2		I-21
FB 6 N	Replace 4 lower flange rivets at west end	1	(4)		I-21
	Replace 2 lower flange rivets at east end	2	2		I-21
FB 7 N	Replace 4 clip angle rivets at east end	1	4		I-21

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Rivs. Hrs PL.	Material Repl	
FB 8 S	Replace 3 clip angle rivets at east end	1	(3)		I-22
FB 8 N	Repair deteriorated floor beam stiffener at ST-9	2		/	I-22
	Repair deteriorated bottom flange at ST-9	2		/	I-22
	Replace 3 deteriorated bottom cover rivets	2	3		I-22
FB 9 S	Replace 7 lower flange rivets at west end	2	7		I-22
	Repair deteriorated bottom flange at ST-1	2		/	I-22
Span S1					
FB 9 N	Replace 13 lower flange rivets at west end	1	(13)		I-22
	Replace 3 lower flange rivets at east end	2	3		I-22
	Replace 4 bottom cover rivets at ST-8	1	(4)		I-22
FB 10 N	Repair support bracket for sidewalk channel on west side	1		(1)	I-22
FB 11 S	Repair deteriorated lower flange at east end	2		/	I-22
	Replace 2 lower flange rivets at west end	1	(2)		I-22
FB 11 N	Replace 7 lower flange rivets at west end	1	(7)		I-23
	Repair deteriorated lower flange at east end	2		/	I-23

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Rlv. Lxc. PL.	Welds Repair	
FB 12 N	Repair deteriorated floor beam stiffener at ST-1	2		/	I-23
FB 13 S	Replace 4 lower flange rivets at east end	1	(4)		I-23
FB 13 N	Repair deteriorated floor beam stiffener at west end	2		/	I-23
	Replace 10 lower flange rivets at east end	1	(10)		
FB 14 S	Repair deteriorated upper flange at east end	2		/	I-24
FB 14 N	Replace 2 lower flange rivets at west end	2	2		I-24
	Replace 7 bottom cover rivets	2	7		I-24
FB 15 S	Replace 4 bottom cover rivets	2	4		I-24
FB 15 N	Replace 3 lower flange rivets at west end	2	3		I-24
FB 16 N	Replace 6 lower flange rivets at west end	2	6		I-24
	Repair deteriorated lower flange at ST-9	2		/	I-24
	Replace 4 lower flange rivets at east end	2	4		I-24
FB 15' N	Replace 12 bottom cover rivets	1	(12)		I-24
FB 14' S	Replace 3 lower flange rivets at west end	2	3		I-25
FB 14' N	Replace 2 bottom cover rivets	1	(2)		I-25
FB 13' S	Replace 17 lower flange rivets at west end	1	(17)		I-25
FB 13' N	Replace 4 lower flange rivets at west end	2	4		I-25
	Replace 4 bottom cover plate rivets	2	4		I-25
FB 12' S	Repair 1 deteriorated floor beam stiffener	2		/	I-25

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Rivt. Lhc. Pl.	Mem. Rpl.	
FB 12' S	Replace 1 lower flange rivet at east end	2	1		I-25
	Replace 6 lower flange rivets at west end	1	(6)		I-25
FB 11' S	Replace 2 lower flange rivets at east end	2	2		I-25
	Replace 20 lower flange rivets at west end	1	(20)		I-25
FB 11' N	Replace 11 lower flange rivets at west end	1	(11)		I-25
	Replace 5 lower flange rivets at east end	2	5		I-25
FB 10' N	Replace 5 lower flange rivets at east end	2	5		I-26
	Repair deteriorated floor beam stiffener at ST-1	2		1	I-26
FB 9'-S	Replace 11 lower flange rivets at west end	2	11		I-26
Span S2					
FB 9' N	Replace 8 lower flange rivets at west end	2	8		I-26
FB 8' S	Replace 5 lower flange rivets at east end	2	5		I-26
FB 6' S	Replace 1 lower flange rivets at west end	2	1		I-26
FB 5' S	Replace 15 lower flange rivets at west end	1	15		I-27
FB 5' N	Replace 5 lower flange rivets at east end	1	(5)		I-27

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			RIV LAC PL.	MISC REP	
FB 5' S	Replace 7 lower flange rivets at west end	1	(7)		I-27
	Repair deteriorated floor beam stiffener	2		1	I-27
FB 3' S	Replace 1 lower flange rivet at east end	2	1		I-27
FB 2' N	Replace 2 lower flange rivets at west end	2	2		I-27
FB 1' S	Replace 6 lower flange rivets at east end	1	(6)		I-27
FB 1' S	Repair 1 deteriorated floor beam stiffener	2		1	I-27

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			RIV. LACE PL.	MEM REP.	
B - Stringers					
Span S3					
Bay 5-6 ST-1	Repair deteriorated lower flange at south end	2		/	I-28
Bay 6-7 ST-1	Repair deteriorated lower flange at south end	2		/	I-28
Bay 6-7 ST-9	Repair deteriorated lower flange	2		/	I-28
Bay 7-8 ST-1	Repair deteriorated lower flange	2		/	I-28
Bay 7-8 ST-9	Repair deteriorated web and flange at south end	2		2	I-28
B 8-9 ST-1	Repair deteriorated lower flange at south end	2		/	I-28
Span S1					
Bay 10-11 ST-1	Repair deteriorated lower flange	2		/	I-29
Bay 10-11 ST-9	Replace 13 stiffener angle rivets	1	13		I-29
Bay 11-12 ST-9	Repair deteriorated lower flange	2		/	I-29
Bay 10'-9' ST-1	Repair deteriorated lower flange	2		/	I-31
	Repair deteriorated web at north and south ends	2		2	
Bay 10'-9' ST-3	Repair deteriorated lower flange and web at south end	2		2	I-32
Bay 10'-9' ST-4	Repair deteriorated web at south end	2		/	I-32
Bay 10'-9' ST-9	Repair deteriorated web at north end	2		/	I-32
	Repair deteriorated bottom flange at south end	2		/	I-32
Span S2					
Bay 9'-8' ST-1	Repair deteriorated bottom flange	2		/	I-32

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
C - Deck					
Span S3					
Bay 0-1 ST2-8	Patch (20) SF area	2			I-34
Sidewalk	Patch (10) SF area	1			I-34
Bay 1-2 Sidewalk	Patch (10) SF area	1			I-34
Bay 3-4 Sidewalk	Patch (15) SF area	1			I-35
ST2-3	Patch (4) SF area	2			I-35
Bay 4-S Sidewalk	Patch (10) SF area	1			I-35
Bay 5-6 Sidewalk	Patch (4) SF area	1			I-35
Bay 6-7 Sidewalk	Patch (15) SF area	1			I-36
Bay 7-8 Sidewalk	Patch (10) SF area	1			I-36
ST2-3	Patch (4) SF area	1			I-36
Bay 8-9 Sidewalk	Patch (20) SF area	2			I-36
ST1-2	Patch (10) SF area	1			I-36
Span S1					
Bay 9-10 Sidewalk	Patch (10) SF area	1			I-37
ST2-4	Patch (5) SF area	1			I-37
Bay 10-11 ST2-4	Patch (5) SF area	2			I-37
Bay 11-12 ST6-7	Patch (4) SF area	1			I-38
Bay 12-13 Sidewalk	Patch (5) SF area	1			I-38
Sidewalk	Patch (10) SF area	1			I-38
Bay 13-14 ST2-3	Patch (4) SF area	1			I-39
ST3-4	Patch (2) SF area	1			I-39
ST5-6	Patch (2) SF area	1			I-39
Sidewalk	Patch (5) SF area	1			I-39
Bay 16-15' Sidewalk	Patch (10) SF area	1			I-39
Bay 15'-14' Sidewalk	Patch (15) SF area	1			I-39
Bay 14'-13' Sidewalk	Patch (5) SF area	1			I-39
Bay 13'-12' Sidewalk	Patch (10) SF area	1			I-40
ST2-3	Patch (2) SF area	1			I-40
ST5-6	Patch (10) SF between stringers	2			I-40
Bay 12'-11' ST3-4	Patch (2) SF area	2			I-40

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
ST2-3	Patch (5) SF area	1			I-40
Sidewalk	Patch (10) SF area	2			I-40
Bay 11'-10' Sidewalk	Patch (5) SF area	1			I-40
ST4-5	Patch (4) SF area	2			I-40
Span S2					
Bay 9'-8' ST5-6	Patch (5) SF area	2			I-41
ST2-3	Patch (5) SF area	1			I-41
Bay 8'-7' ST6-7	Patch (5) SF area	1			I-41
ST2-6	Patch (20) SF area	2			I-41
Bay 7'-6' ST2-6	Patch (20) SF area	2			I-41
ST5-6	Patch (2) SF area	1			I-41
Sidewalk	Patch (10) SF area	1			I-41
Bay 6'-5' ST2-6	Patch (10) SF area	1			I-42
Bay 5'-4' ST2-3	Patch (20) SF between stringers	2			I-42
Bay 4'-3' Sidewalk	Patch (10) SF area	1			I-42
Bay 3'-2' Sidewalk	Patch (10) SF area	1			I-42
ST2-3	Patch (10) SF between stringers	1			I-42
Bay 2'-1' ST2-3	Patch (2) SF area	1			I-43
ST3-4	Patch (5) SF, stringer to stringer	1			I-43
Sidewalk	Patch (5) SF area	1			I-43
Bay 1'-0' ST7-8	Patch (2) SF area	1			I-43
ST2-3	Patch (15) SF area	1			I-43
ST5-6	Patch (5) SF area	1			I-43

423 SF
51 LOCATIONS
(AVG 8.3 SF/SET)

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
C - Sidewalk			Riv Lac. PL.	Mgmt Rep	
Span S1					
Bay 10-11	Repair deteriorated sidewalk channel support on west side at south end	1		/	I-45
Bay 15-16	Replace 8 upper gusset rivets at north end	2	8		I-46
Bay 11'-10'	Repair deteriorated sidewalk channel support on east side at north end	1			I-46
Bay 10'-9'	Replace deteriorated upper gusset at south end	2	/		I-46
Span S2					
Bay 9'-8'	Repair west channel lower flange at north end	2		/	I-46
Bay 8'-7'	Replace 2 deteriorated lower gusset rivets at north end	2	2		I-46
Bay 6'-5'	Replace 2 deteriorated lower gusset rivets at north end	2	2		I-47
Bay 2'-1'	Repair deteriorated west channel flanges	2		/	I-47
Bay 1'-0'	Replace deteriorated lower gusset at south end	2	/		I-47

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			RIV GRAT.SEC PL.	MBR2EP	
C - Walkway					
Span S1					
Bay 9-10	Replace 6 deteriorated grating sections	3	6		I-43
Bay 11-12	Repair deteriorated walkway supporting angles	3		1	I-48
	Replace 5 deteriorated grating sections	3	5		I-48
Bay 12-13	Replace 1 deteriorated grating section	3	1		I-48
	Repair deteriorated walkway supporting plates	3	1		I-48
Bay 14-15	Replace 9 deteriorated grating sections	3	9		I-48
	Replace 1 deteriorated bracing angle rivet	3	1		I-48
Bay 15'-14'	Replace 2 deteriorated grating sections	3	2		I-48
Bay 12'-11'	Replace 9 deteriorated grating sections	3	9		I-48
Bay 11'-10'	Replace 2 deteriorated grating sections	3	2		I-48
Span S2					
Bay 9'-8'	Replace 8 deteriorated grating sections	3	8		I-48
Bay 8'-7'	Replace 5 deteriorated grating sections	3	5		I-48
Bay 7'-6'	Replace 2 deteriorated grating sections	3	2		I-48
Bay 5'-4'	Replace 2 deteriorated grating sections	3	2		I-48

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			RIV. LAC. PL.	NUMBER	
D - Top Lateral Bracing					
Span S3					
Bay 1-2	Replace 3 northwest upper gusset rivets	1	(3)		I-49
	Repair deteriorated northeast lower gusset	2	/		I-49
	Replace 3 southeast lower gusset rivets	2	3		I-49
	Repair deteriorated lower flange of lateral at south east gusset	2		/	I-49
	Replace 12 southwest upper gusset rivets	1	(12)		I-49
	Repair deteriorated southwest lower gusset	2	/		I-49
Bay 2-3	Replace 5 northwest upper gusset rivets	1	(5)		I-49
	Replace 7 southwest upper gusset rivets	1	(7)		I-49
	Repair deteriorated southwest lower gusset	2	/		I-49
	Repair deteriorated southeast lower gusset	2	/		I-49
	Repair deteriorated northeast lower gusset	2	/		I-49
Bay 3-4	Replace 12 southwest upper gusset rivets	1	(12)		I-50
	Replace 2 southwest lower gusset rivets	1	2		
	Repair deteriorated lower flange of lateral at southeast gusset	1		/	

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Riv. Lac. PL	MBI/BE/L	
Bay 4-5	Repair deteriorated southwest lower gusset	2	2		I-50
	Replace 3 northwest upper gusset rivets	2	3		I-50
	Repair deteriorated southeast lower gusset	2	1		I-50
	Replace 3 southeast lower gusset rivets	1	(3)		I-50
Span S1					
Bay 9-10	Replace 10 lower laces of strut at U10	1	10		I-50
Bay 11-12	Replace 1 lower lace of strut at U11	1	1		I-51
	Replace 17 lower flange rivets of strut at U11	1	(17)		I-51
	Replace 1 lower gusset rivet at U11E	1	(1)		I-51
	Replace 4 lower flange rivets of strut at U12	2	4		I-51
Bay 15-16	Replace 1 upper gusset rivet at U15E	1	(1)		I-52
	Repair deteriorated lower flange of bracing U16E-U15'W at L16E	2		1	I-52
	Replace 1 upper gusset rivet at U16E	2	1		I-52
Bay 14'-13'	Repair deteriorated lower flange of bracing U14'E-U13'W at U14'E	2		1	I-54
Bay 13'-12'	Repair deteriorated lower flange of bracing U13'E-U12'W	2		1	I-54
	Repair deteriorated lower flange of bracing U13'E-U12'W at intersection	2		1	I-54

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Riv. Lac Pl.	MBM&L	
Bay 12'-11'	Replace 1 lower gusset rivet at U11'W	2	1		I-56
Bay 10'-9'	Replace 8 deteriorated lower laces of strut at U10'	1	8		I-56
Span S2					
Bay 5'-4'	Repair deteriorated northeast upper gusset	4 ?	1		I-57
	Replace 4 southeast upper gusset rivets	2	4		I-57
	Replace 26 southwest upper and lower gusset rivets	1	26		I-57
	Repair deteriorated northwest lower gusset	2	1		I-57
	Replace 12 northwest lower gusset rivets	1	12		I-57
Bay 4'-3'	Repair deteriorated northeast lower gusset	2	1		I-58
	Replace 6 northeast lower gusset rivets	2	6		I-58
	Repair deteriorated southeast upper and lower gussets	2	2		I-58
	Replace 2 northwest upper gusset rivets	2	2		I-58
Bay 3'-2'	Replace 4 northwest upper gusset rivets	1	4		I-58
	Replace 4 northeast upper gusset rivets	2	4		I-58
	Replace 7 northeast lower gusset rivets	2	7		I-58
	Replace 3 southeast upper gusset rivets	2	3		I-58
Bay 2'-1'	Repair deteriorated northeast lower gusset	1	1		I-59
	Replace 3 northeast lower gusset rivets	1	3		I-59

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
Bay 1'-0'	Repair deteriorated northeast upper and lower gussets	2	PL 2		I-59

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			RN, LLC PL	MEMBER	
E -Bottom Lateral Bracing					
Span S3					
Bay 0-1	Repair all laces of strut at L0	1	(200)		I-60
	Replace 10 lacing rivets of strut at L0	1	(10)		I-60
	Replace 2 laces of strut at L1	2	2		I-60
	Replace 1 lacing rivet of strut at L1	2	1		I-60
Bay 2-3	Replace 2 lower gusset rivets at L2E	2	2		I-60
	Replace 2 upper gusset rivets at L3W	2	2		I-60
Bay 4-5	Replace 6 upper gusset rivets at L4W	1	(6)		I-60
	Repair deteriorated upper gusset at L4E	2	1		I-60
	Replace 4 deteriorated laces of strut at L5	2	4		I-60
	Replace 2 lacing rivets of strut at L5	2	2		I-60
	Replace 3 upper gusset rivets at L5E	2	3		I-60
	Replace 12 upper gusset rivets at L5W	1	(12)		I-60
	Replace 4 deteriorated laces of bracing L5E-L6W at L5E	2	4		I-60
Bay 6-7	Replace 16 upper gusset rivets at L6W	1	(16)		I-61
	Replace 2 deteriorated laces of bracing L6E-L7W at L6E	1	(2)		I-61
	Replace 10 deteriorated laces of strut at L6	1	(10)		I-61
	Replace 9 upper gusset rivet at L7W	2	9		I-61

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Riv. LAC PL.	M3MB&R	
	Replace 5 upper gusset rivets at L7E	1	(5)		I-61
Bay 8-9	Replace 20 deteriorated laces of strut at L8	1	(20)		I-62
	Repair deteriorated upper gusset at L8W	2	1		I-62
	Replace 8 upper gusset rivets at L8W	1	(8)		I-62
Bay 8-9	Replace 20 deteriorated laces of strut at L9	1	(20)		I-63
	Repair deteriorated bottom gusset at L9E	2	1		I-63
	Replace 10 upper gusset rivets at L9E	2	10		I-63
Span S1					
Bay 9-10	Replace 4 lower gusset rivets at L9E	2	4		I-63
	Replace 2 deteriorated laces of bracing L9W-L10E at L10E	1	(2)		I-63
	Replace 60 deteriorated laces of strut at L10	1	(60)		I-63
Bay 11-12	Replace 20 lacing rivets of strut at L12	1	(20)		I-63
	Replace 1 upper gusset rivet at L12W	2	1		I-63
Bay 13-14	Replace 2 lacing rivets of strut at L13	2	2		I-63
	Repair deteriorated lower flange of bracing L13E-L14W at L13E	2		1	I-63
	Replace 2 upper gusset rivets at L14W	2	2		I-63
	Repair deteriorated lower flange of bracing L13W-L14E at L14E	2		1	I-63

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Riv. LAC PL.	MISC/SL	
Bay 15-16	Repair deteriorated upper flange of bracing L15W-L16E at intersection	2		1	I-64
	Repair deteriorated upper gusset at L16W	2	1		I-64
	Repair deteriorated upper gusset at L16E	2	1		I-64
	Replace 4 upper gusset rivets at L16E	2	4		I-64
Bay 14'-13'	Replace 6 lacing rivets of strut at L14'	1	(6)		I-66
	Repair deteriorated upper gusset at L14'E	2	1		I-66
Bay 14'-13'	Replace 5 lacing rivets of strut at L13'	1	(5)		I-66
Bay 12'-11'	Replace 31 lower flange rivets of strut at L12'	1	(31)		I-67
Bay 10'-9'	Replace 7 upper gusset rivets at L10'E	1	(7)		I-67
Span S2					
Bay 9'-8'	Replace 8 upper lacing rivets of strut at L9'	2	8		I-67
	Replace 9 upper gusset rivets at L8'W	2	9		I-67
	Repair deteriorated lower gusset at L8'W	2	1		I-67
	Repair deteriorated lower gusset at L8'E	2	1		I-67

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Riv. Lac. PL	Mem	
Bay 7'-6'	Repair deteriorated upper and lower gusset at L6'W	2	2		I-68
	Repair deteriorated upper and lower gusset at L6'E	2	2		I-68
Bay 5'-4'	Replace ± 10% laces of strut at L5'	2	20		I-68
	Repair deteriorated upper gusset at L4'W	2	1		
Bay 3'-2'	Replace 1 deteriorated lace of strut at L3'	1	1		I-70
	Repair deteriorated upper and lower gussets at L3'E	2	2		I-70
	Repair deteriorated upper gusset at L2'E	2	1		I-70
	Replace 1 deteriorated lace of strut at L2'	1	1		I-70
	Repair deteriorated upper gusset at L2'W	2	1		I-70
Bay 1'-0'	Repair ± 30% of lower laces of strut at L1'	2	60		I-72

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Riv. Lac. PL.	MGHB	
F - Sway Bracing					
Span S3					
Bay 0-1 at 0	Replace 3 laces of lower west bracing	1	3		I-74
	Replace 14 laces of lower east bracing	1	14		
	Replace 8 deteriorated lacing rivets	2	8		I-74
	Replace 12 laces of upper west bracing	1	12		I-74
	Replace 11 deteriorated lower west gusset rivets	1	(11)		I-74
	Replace 10 deteriorated lower east gusset rivets	1	(10)		I-74
Bay 4-5 at 5	Replace 2 laces of upper west bracing	1	2		I-74
	Replace 4 laces of upper east bracing	1	4		I-74
	Replace 6 deteriorated upper east bracing rivets	1	(6)		I-74
Bay 5-6 at 6	Replace 3 deteriorated lower west gusset rivets	1	(3)		I-74
	Replace 10 laces of upper east bracing	1	10		I-74
	Replace 6 laces of upper west bracing	1	6		I-74
	Replace deteriorated batten plate of upper west bracing	(4)?	1		I-74
Bay 6-7 at 7	Replace 6 laces of lower east bracing	1	6		I-75
	Replace 4 laces of upper west bracing	1	4		I-75
	Repair deteriorated upper west gusset	2	1		I-75
	Replace 4 laces of upper east bracing	1	4		I-75

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Riv. Lac PL	1/4/13 -	
	Replace 1 deteriorated rivet of lower east gusset	2	1		I-75
Bay 7-8 at 8	Replace 4 laces of lower east bracing	1	4		I-75
	Replace 10 laces of upper west bracing	1	10		I-75
Bay 8-9 at 9	Replace 8 laces of lower west bracing	1	8		I-76
	Replace 2 deteriorated lower west gusset rivets	2	2		I-76
	Replace 8 laces of lower east bracing	1	8		I-76
	Replace 4 deteriorated lower east bracing rivets	2	4		I-76
	Replace 8 laces of upper east bracing	1	8		I-76
	Replace 8 laces of upper west bracing	1	8		I-76
	Repair deteriorated upper west gusset	2	1 PL		I-76
Span S1					
Bay 9-10 at 10	Replace all deteriorated stay plates of lower east-west truss at L10	2	20± PL		I-76
Bay 10'-9' at 10'	Replace all deteriorated stay plates of lower east-west truss at L10'	2			I-76
	Replace 7 deteriorated rivets of lower east-west truss at L10'	2	7 20± PL		I-76

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			RIV LAC PL	mark3	
Span S2					
Bay 9'-8' at 9'	Replace 14 deteriorated upper west gusset rivets	2	14		I-76
Bay 7'-6' at 7'	Replace 5 laces of upper west bracing	1	(5)		I-77
Bay 6'-5' at 6'	Replace 3 deteriorated upper west bracing rivets	2	3		I-77
Bay 5'-4' at 5'	Replace 1 lace of upper east bracing	2	1		I-78
	Repair deteriorated middle gusset	2	1		I-78
Bay 1'-0' at 0'	Replace 13 laces of lower west bracing	2	13		I-78
	Replace ± 50% laces of upper east bracing	2	100		I-78
	Replace ± 10% laces of upper west bracing	2	20		I-78
Bay 1'-0' at 0'	Repair deteriorated upper west gusset	2	1		I-78

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			Riv. Lac PL	INSPB	
G - Wind Chord					
Span S1					
Bay 10-11	Replace 14 deteriorated laces of strut at L10	1	(14)		I-82
Bay 11-12	Repair deteriorated lower flange of bracing L11W-L12E	1		/	I-82
	Replace 2 deteriorated lower flange rivets	1	(2)		I-82
	Repair deteriorated lower flange of bracing L11E-L12W	1		/	I-82
	Replace 5 deteriorated laces	1	(5)		I-82
	Replace 3 deteriorated upper gusset rivets at L11W	1	(3)		I-82
Bay 12-13	Replace 12 deteriorated laces of bracing L12E-L13W	1	(12)		I-85
	Replace 2 deteriorated laces of bracing L12W-L13E	2	2		I-85
Bay 13-14	Repair deteriorated lower flange of bracing L13W-L14E at catwalk	1		/	I-83
	Replace 6 deteriorated lower flange rivets	1	(6)		I-83
	Replace 4 deteriorated laces of bracing L13W-L14E	2	4		I-83
	Repair deteriorated lower flange of bracing L13E-L14W at catwalk	1		/	I-83
	Replace 2 deteriorated lower flange rivets	2	2		I-83
	Replace 4 deteriorated laces of bracing L13E-L14W	2	4		I-83
	Repair deteriorated lower flange of bracing L13W-L14E at L13W	1		/	I-83

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			RIV LOC PL	M3MB	
Bay 15-16	Replace 3 upper gusset rivets at L15W	2	3		I-84
	Replace 12 upper gusset rivets at L16E	1	(12)		I-84
	Replace 16 upper gusset rivets at L16W	2	16		I-84
Bay 16-15'	Replace 20 deteriorated laces of bracing L16E-L15'W	1	(20)		I-84
	Replace 4 deteriorated laces of bracing L16W-L15'E	2	4		I-84
Bay 15'-14'	Replace 2 deteriorated laces of bracing L15'W-L14'E	1	(2)		I-86
	Replace 32 deteriorated laces of bracing L15'E-L14'W	1	(32)		I-86
	Replace 3 lower gusset rivets at L14'W <15'W	2	3		I-86
Bay 14'-13'	Replace 12 deteriorated laces of bracing L14'W-L13'E	2	12		I-79
Bay 14'-13'	Replace 4 deteriorated laces of bracing L14'E-L13'W	1	(4)		I-79
	Replace 7 upper gusset rivets at L13'W	2	7		I-79
Bay 13'-12'	Replace 4 deteriorated laces of bracing L13'W-L12'E	2	4		I-79
	Repair deteriorated upper flange of bracing L13'W-L12'E	2		1	I-79
	Replace 26 deteriorated laces of bracing L13'E-L12'W	1	(26)		I-79
Bay 12'-11'	Repair deteriorated lower flange of bracing L12'E-L11'W at catwalk	1		1	I-80
	Replace 8 lower gusset rivets at L12'W	1	(8)		I-80

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			RIV. LACE PL	MEMB	
Bay 11'-10'.	Replace 12 deteriorated upper laces of strut at L10'	1	(12)		I-80
	Replace 12 deteriorated lower laces of strut at L10'	1	(12)		I-80
	Replace 20 deteriorated lacing rivets of strut at L10'	1	(20)		I-80
	Replace 10 deteriorated rivets at north end of east wind chord	1	(10)		I-80
	Replace 4 lower gusset rivets at L10'W	2	4		I-80
	Replace 2 deteriorated laces of bracing L11'W-L10'E	2	2		I-80
	Replace 2 missing bolts thorugh shim plate at north end of west wind chord	1	2		I-80

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
H - Bearings					
South Abutment	Straighten anchor bolts of both bearings	2			I-87
North Abutment	Straighten anchor bolts of both bearings	2			I-87
	Repair cracked and hollow concrete at southeast corner of bearing area under east bearing	2			I-87

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
			RIV. LAC PL	MBMP	
I - On Deck Inspection					
Deck	Clean all clogged scupper covers	2			I-88
	Seal all cracks in asphalt pavement surface	2			I-88
	Repair unravelled asphalt along curb	2			I-88
Railing	Replace 1 deteriorated vertical at south end of Span S3	2		/	I-90
	Sandblast and paint railing for entire length of bridge	2			I-90
Lightposts	Replace deteriorated laces and lacing rivets on lightposts	2			I-95
	Replace all deteriorated anchor bolts	2			I-95
	Replace deteriorated nuts on cable clamps for lights on center span	2			I-95
	Sandblast and paint all lightposts	2			I-95

Location	Repairs Recommended	Priority	Comments	Cost Estimate	Report Page Ref.
Additional Repairs					
Catwalk on superstructure	Replace all deteriorated nuts for catwalk to east lateral bracing gussets connection	2			
	Replace safety cable and repair brackets for safety cable.	2			
Ladders	Repair all deteriorated brackets and bolts such as at panel point 0	2			
Sidewalk channel clip angles	To be inspected after sandblasting	2			

VI. SUMMARY AND CONCLUSIONS

The Sagamore Bridge has continued to deteriorate since the 1969 inspection. It is recommended that the required remedial work noted in Table C of Section V be performed as expeditiously as possible. On a priority basis, the following items requiring remedial work, where the structural integrity of the bridge is concerned, should be repaired immediately:

1. Sidewalk channel supports.

2. Underside of concrete deck slab.

Additionally, tests indicate that the deck slab concrete has been contaminated by a high percentage of chloride as a result of the continued use of salt in snow removal operations. At the present time, more than 5 percent of the deck area is visibly spalled, and this spalling will continue. Accordingly, it is recommended that the deck be completely replaced as soon as practicable by a deck designed to resist deterioration caused by the use of salt in snow removal procedure.

APPENDIX I

Detailed Results of Field Inspection

A

TRUSS MEMBERS

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S3	LOW-UOW	Outside east face	1/8" - ±3/16" pitting full length		A S3 0-1 W	A,S3,0-1,W,7
	LOW-UOW	±50% Laces	1/16" - 1/8"		A S3 0-1 W	A,S3,0-1,S,2 A,S3,0-1,S,8
	LOW-L1W	North upper stay plate underside	1/16" - 1/8"		A S3 0-1 W	
	UOE-U1E	West outside face and lower edge	1/16" - 1/8"		A S3 0-1 E	
	LOE-L1E	±75% Laces	1/16" - 1/8"		A S3 0-1 E	
	U1W-L2W	±75% Laces	1/16" - 1/8"		A S3 2-3 W	
✓	L2W-U2W	±15 Laces	1/8" to ±50% Loss		A S3 2-3 W	
	L1W-L2W	±8 Laces ±24 Laces	1/16" - 1/8" 1/16"		A S3 2-3 W A S3 2-3 W	
	L2W-U3W	±50% Laces	1/16"		A S3 2-3 W	
✓	L3E-L4E	Lower lacing rivets	6 Rivets 75%		A S3 4-5 E	
	U3E-L4E	±50% Laces	1/16" - 1/8"		A S3 4-5 E	
✓	L4E-U5E	±70% Laces 2 Laces	1/16" - 1/8" 1/8" to ragged		A S3 4-5 E A S3 4-5 E	A,S3,4-5,N,2
	L3W-L4W	±10% Laces	1/16" - 1/8"		A S3 4-5 W	
	L4W-U4W	±90% Laces	1/16" - 1/8"		A S3 4-5 W	
✓ ✓	L4W-U5W	±28 Lower laces	100% Loss		A S3 4-5 W	A,S3,4-5,N,1
✓	L5W-U5W	±12 Laces	1/16" to ragged		A S3 4-5 W	A,S3,5-6,N,4

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S3	L5E-L6E	North end, west lower flange rivets	1 Rivet 75%		A S3 6-7 E	
	L6E-L7E	South end, west lower flange rivets	3 Rivets 50%		A S3 6-7 E	
	L5W-L6W	Inside L6W, lower flange rivets	2 Rivets 50% 5 Rivets 75%		A S3 6-7 W	
	U5W-L6W	North lower stay plate top surface	1/16" - 1/8" over 75% of area		A S3 6-7 W	
	L6W-U7W	±50% Top laces	1/16"		A S3 6-7 W	
		All lower laces	1/16" - 1/8"		A S3 6-7 W	A,S3,6-7,N,2
		South lower stay plate top surface	1/16" - 1/8" over 75% of area		A S3 6-7 W	
	L6W-U6W	Upper portion at U6W west outside surface	1/16" - 1/8" 4 Rivets 50%		A S3 6-7 W	
	U5W-U6W	Inside surface at north	Peeling		A S3 6-7 W	A,S3,6-7,S,3
	L6W-L7W	±75% Lower laces	1/16" - 1/8"		A S3 6-7 W	
	L7W-U7W	±50% Laces	1/16" with peeling		A S3 6-7 W	A,S3,7-8,N,1
	L7W-L8W	South upper stay plate rivets	2 Rivets 50%		A S3 6-7 W	
	U7E-L8E	±10% Laces	1/16" - 1/8"		A S3 8-9 E	
	L8E-U8E	±75% North laces	1/16" - 1/8"		A S3 8-9 E	
	L8E-U9E	±50% Laces	1/16" - 1/8"		A S3 8-9 E 1	
	L8E-L9E	All laces inside surfaces	1/16"		A S3 8-9 E 1	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S3	U8E-U9E	±9 Laces	1/16" to ragged edges		A S3 8-9 E 2	A,S3,8-9,S,3
	PP U9E	Vertical stiffener plate at upper chord connection southwest connection angle	-	(1)	A S3 8-9 E 2	
	L9E-L10E	±60% Top laces	1/16" - 1/8"		A S3 8-9 E 2	
		South upper stay plate, top surface	1/16" - 1/8" over 75% of area		A S3 8-9 E 2	
	L9E-U9E	Middle vertical stiffener plate just below deck	1/8" pitting		A S3 8-9 E 2	
	L8W-U8W	±10% Laces	1/16" - 1/8"		A S3 8-9 W 1	
	L8W-L9W	South upper stay plate north edge	1/8" to ragged edges		A S3 8-9 W 1	
	U8W-U9W	±9 Laces	1/16" to ragged edges		A S3 8-9 W 2	A,S3,8-9,S,4
	L8W-U9W	±32 Laces	30% to 100% Loss in thickness		A S3 8-9 W 2	A,S3,8-9,N,5
	L9W-U9W	South face of middle vertical stiffener plate just below deck	1/8" pitting over ±40% of area		A S3 8-9 W 2	
	L9W-L10W	South upper stay plate top surface	1/16" - 1/8" over 75% of area		A S3 8-9 W 2	
		Lower connection angle rivets	2 Rivets 75%		A S3 8-9 W 2	
S1	L10E-U10E	All laces	1/16"		A S1 9-10 E	A,S1,10-11,S,8
	L10E-U11E	±75% Laces	1/16" - 1/8"		A S1 9-10 E	A S1,10-11,S,12

Note: (1) Angle bowed out ±1/2 inch by layered rust for ±8 inches.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	L14W-U15W	±16 Laces	1/8" pitting		A S1 13-14 W	A,S1,14-15,S,13 A,S1,14-15,N,14 A,S1,14-15,N,15
		Lower lacing rivets	±5 Rivets 50%		A S1 13-14 W	
	PP L14W	Inside face of gussets	1/16" - 1/8"		A S1 13-14 W	
	U14E-U15E	North stay plate underside edge	50-75% loss and ragged edge		A S1 15-16 E	A,S1,14-15,N,16
	U15E-U16E	South end inside surfaces	Flaking		A S1 15-16 E	A,S1,15-16,S,7
	L14E-L15E	North lower stay plate top surface	1/16" - 1/8"		A S1 15-16 E	A,S1,14-15,N,19
	L15E-U15E	Bottom portion, middle stiffener plate	1/8" pitting over ±25% of area		A S1 15-16 E	
	PP L15E	Inside surfaces Vertical stiffener plate at chord splice	Peeling, surface rust 1/8" Pitting over ±25% of area		A S1 15-16 E A S1 15-16 E	A,S1,15-16,S,4
	L15E-L16E	North upper stay plate underside south edge	±50% Loss		A S1 15-16 E	A,S1,15-16,N,12
		North lower stay plate top surface south edge	1/8" to ragged edges		A S1 15-16 E	A,S1,15-16,N,1
	PP L16E	Cable hanger rivet heads top surface	3 Rivets 50-75%		A S1 15-16 E	
	L16E-L15'E	South upper and lower stay plates inside surfaces	1/16" - 1/8" to ragged edges		A S1 15-16 E	A,S1,16-15',S,4 A,S1,16-15',S,6
	U14W-U15W	North stay plate edges	1/16" to ragged edges		A S1 15-16 W	
		±7 Laces	1/16" - 1/8"		A S1 15-16 W	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	L15W-L16W	North upper stay plate North lower stay plate South upper stay plate south edge	1/16" - 1/8" 1/16" over 100% area 1/16" - 1/8"		A S1 15-16 W A S1 15-16 W A S1 15-16 W	A,S1,15-16,N,6 A,S1,15-16,N,2
	L16W-L15'W	South upper stay plate west edge South lower stay plate north edge	1/16" - 1/8" 30 - 50% loss		A S1 15-16 W A S1 15-16 W	A,S1,16-15',S,5 A,S1,16-15',S,3
	PP L16W	Inside surfaces	Blistering with surface rust		A S1 15-16 W	A,S1,15-16,N,3
	L15W-L16W	South end middle horizontal stiffener plate	1/16" over 100% area		A S1 15-16 W	
	PP L15W	Vertical stiffener inside at chord splice	1/8" pitting over ±40% of area		A S1 15-16 W	
	L14W-U15W	±50% of laces	1/16" - 1/8"		A S1 15-16 W	A,S1,14-15,S,13 A,S1,14-15,N,14
	L16E-L15'E	North upper and lower stay plates	1/16" to ragged edges		A S1 16-15' E	A,S1,16-15',N,7 A,S1,16-15',N,8
	L15'E-L14'E	South lower stay plate north edge North upper and lower stay plates	1/16" to ragged edges 1/16" to ragged edges		A S1 16-15' E A S1 16-15' E	A,S1,15'-14',S,3 A,S1,15'-14',N,1 A,S1,15'-14',N,2
	U15'E-U14'E	South stay plate top surface	1/16" - 1/8"		A S1 16-15' E	
	U16W-U15'W	Underside of top cover at U15W	Flaking		A S1 16-15' W	A,S1,15'-14',N,12
	PP U15'W	Bottom edge of middle stiffener plate at chord splice	±50% Thickness loss		A S1 16-15' W	A,S1,16-15',N,9 A,S1,15'-14',S,10
	L16W-U15'W	Inside cover faces along flange angle edge	1/16"		A S1 16-15' W	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	L13E	Inside surfaces	Blistering		A S1 13-14 E	A,S1,13-14,S,23
		Cable hanger rivet heads	3 Rivets 50%		A S1 13-14 E	
	U13E-U14E	Underside of top cover at U14E	Blistering, 1/8"		A S1 13-14 E	A,S1,13-14,N,22
		North stay plate top surface	1/16" - 1/8"		A S1 13-14 E	
	U13E-L14E	North end fill plates at upper and lower flange angles		(6)	A S1 13-14 E	A,S1,13-14,N,18 A,S1,13-14,N,19 A,S1,13-14,NW,20 A,S1,13-14,NE,21
	L14E-L15E	South upper stay plate underside at corners	1/16" - 1/8"		A S1 13-14 E	
	L12W-U13W	Middle stiffener plate at top end	1/16" - 1/8" over ±30% of area		A S1 13-14 W	A,S1,12-13,N,10
		All laces	1/16" - 1/8"		A S1 13-14 W	A,S1,12-13,N,1
		North lower stay plate lower edge, Rivets	1/8" to 100% loss 4 Rivets 50%		A S1 13-14 W	A,S1,12-13,N,6
	L13W-U13W	Inside channel faces	Heavy blistering		A S1 13-14 W	A,S1,13-14,DWN,14
		±20 Laces	1/16" - 1/8"		A S1 13-14 W	A,S1,13-14,N,15
	L13W-L14W	±5 Laces	1/8" - 3/16"		A S1 13-14 W	
	U13W-U14W	Underside of top cover at north end	1/16" - 1/8"		A S1 13-14 W	
	U13W-L14W	Rivet heads on underside of lower laces	±15 Rivets 50%		A S1 13-14 W	
	L14W-U14W	Inside channel faces and laces	Heavy blistering, 1/16"		A S1 13-14 W	A,S1,14-15,S,18

Note: (6) Upper fill plates bowed out ±3/8"; lower plates bowed ±1/2" by layered rust.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	U11W-U12W	±8 Laces	1/8" to ragged edges		A S1 11-12 W 2	
	U12W-U13W	±20 Laces	1/16" - 1/8"		A S1 11-12 W 2	A,S1,12-13,S,4 A,S1,12-13,S,5
	U11W-U12W	North end, lower fill plates		(4)	A S1 11-12 W 2	A,S1,11-12,N,21
	L12W-U12W	Upper portion, inside face of channels	1/16" - 1/8"		A S1 11-12 W 2	A,S1,11-12,N,27
	PP L12W	Outside face of gusset	Blistering		A S1 11-12 W 2	A,S1,12-13,W,8
	L12W-U12W	Lower portion at L12W into inside face gusset	1/16" - 1/8"		A S1 11-12 W 2	A,S1,11-12,NE,26
	L11W-L12W	North upper stay plate underside	1/8"		A S1 11-12 W 2	A,S1,11-12,N,9
		North lower stay plate top surface	1/16"		A S1 11-12 W 2	
		All laces	1/16"		A S1 11-12 W 2	A,S1,11-12,S,3
		Lacing rivets	3 Rivets 50%		A S1 11-12 W 2	
		North end, fill plate on lower flange angle		(5)	A S1 11-12 W 2	A,S1,11-12,NE,25
	L12E-U13E	Rivets of upper connection angle to gusset	3 Rivets 50%		A S1 13-14 E	A,S1,12-13,N,9
		North upper stay plate underside edge	50-75% Loss		A S1 13-14 E	
		North lower stay plate lower edge	1/16" to ragged edges		A S1 13-14 E	A,S1,12-13,N,7
		All laces	1/16" - 1/8"		A S1 13-14 E	A,S1,12-13,N,2
	U13E-U14E	South stay plate, both edges	1/16" to ragged edges		A S1 13-14 E	A,S1,13-14,S,17
		Underside of top cover at south end, 1" x 12"	1/8".		A S1 13-14 E	A,S1,13-14,N,16

Notes: (4) Fill plate on east side bent outward ±1/2" by layered rust.
(5) Upper fill plates bowed out ±3/8"; lower plates bowed ±1/2" by layered rust.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	U12E-U13E	Outside west face ±10 Laces	Heavy blistering 1/8" to ragged edges		A S1 11-12 E 2 A S1 11-12 E 2	A,S1,12-13,NE,12 A,S1,12-13,S,4
	L12E-U12E	Inside face of channels ±50% Laces	Heavy blistering 1/16"		A S1 11-12 E 2 A S1 11-12 E 2	A,S1,12-13,DWN,3 A,S1,11-12,N,12
	U11E-L12E	±50% Laces	1/16"		A S1 11-12 E 2	A,S1,11-12,S,20
	L12E-U13E	South upper stay plate lower edge South lower stay plate top surface, top edge	±50% Thickness loss 1/16" - 1/8"		A S1 11-12 E 2 A S1 11-12 E 2	
	L11E-L12E	North upper stay plate underside edges North lower stay plate top surface and north edge	30 - 50% Thickness loss 1/16" to knife edge		A S1 11-12 E 2 A S1 11-12 E 2	 A,S1,11-12,N,8
	L11E-L12E	North end, filler plates at lower flange angles		(3)	A S1 11-12 E 2	A,S1,11-12,DWN,23 A,S1,11-12,DWN,24
	PP L12E	Gusset face	Blistering		A S1 11-12 E 2	A,S1,11-12,E,4
	U10W-U11W	±2 Laces	Ragged edge		A S1 11-12 W 1	A,S1,10-11,S,13
	L11W-U11W	±2 Laces Inside surfaces of channels	1/8" pitting Heavy blistering		A S1 11-12 W 1 A S1 11-12 W 1	 A,S1,11-12,DWN,10
	L10W-L11W	North upper stay plate underside	1/8" pitting		A S1 11-12 W 1	A,S1,10-11,N,5
	PP L11W	Inside surfaces Cable hanger, rivet heads	Blistering, 1/16" 2 Rivets 75%		A S1 11-12 W 1 A S1 11-12 W 1	A,S1,10-11,N,10
	L11W-L12W	South lower stay plate top surface	1/16" over ±25% area		A S1 11-12 W 1	A,S1,11-12,S,7

Note: (3) Layered rust under fill plates along edges.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	L10E-L11E	South upper stay plate south edge underside	30% - 50% loss		A S1 9-10 E	A,S1,10-11,S,1
		South lower stay plate south edge top surface	1/16"		A S1 9-10 E	A,S1,10-11,S,2
	U9W-U10W	±18 Laces	Ragged edges		A S1 9-10 W	
	L10W-U10W	±25% Laces	1/16" - 1/8"		A S1 9-10 W	A,S1,9-10,N,3
		Inside east cover plate along northeast angle for ±75% of height	1/16"		A S1 9-10 W	A,S1,9-10,NE,4
	L10W-U11W	South upper stay plate top surface	1/16" - 1/8"		A S1 9-10 W	A,S1,10-11,S,9
		South lower stay plate lower edge	±50% Loss in thickness		A S1 9-10 W	A,S1,10-11,N,4
		Laces below deck level	1/16" - 1/8"		A S1 9-10 W	A,S1,10-11,S,11
	L10W-L11W	±60% Laces	1/16" - 1/8"		A S1 9-10 W	A,S1,9-10,N,6
	U9W-L10W	±70% Laces	1/16" - 1/8"		A S1 9-10 W	
	L10E-L11E	North lower stay plate top surface	1/16"		A S1 11-12 E 1	A,S1,10-11,N,3
	L11E-L12E	South stay plate top surface	1/16" over ±50% area and ragged edge		A S1 11-12 E 1	A,S1,11-12,S,6
		±50 Laces	1/16"		A S1 11-12 E 1	A,S1,11-12,N,18
	PP L11E	Inside surfaces of gussets	1/16"		A S1 11-12 E 1	A,S1,11-12,S,28
	L11E-U11E	All laces	1/16"		A S1 11-12 E 1	A,S1,11-12,S,11
	U11E-U12E	±5 Laces	1/8" - 3/16" pitting		A S1 11-12 E 1	A,S1,11-12,N,22
		Lower west flange angle north end		(2)	A S1 11-12 E 2	

Note: (2) Vertical leg of angle bowed out ±1/2" for ±18" long by layered rust.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	L16W-L15'W	North lower stay plate edge	100% Loss		A S1 16-15' W	A,S1,16-15',N,2
	U14'E-U13'E	Underside of top cover at U14'E	1/16" - 1/8"		A S1 14'-13' E	A,S1,14'-13',S,4
		South stay plate edges	±50% Thickness loss		A S1 14'-13' E	A,S1,14'-13',S,5
	U13'E-U12'E	±6 Laces	Ragged edges		A S1 14'-13' E	A,S1,13'-12',N,7
	L13'E-U13'E	All laces	1/16"		A S1 14'-13' E	
	U13'E-L12'E	±20% Laces	1/16"		A S1 14'-13' E	
	PP L13'E	Cable hanger rivet heads	1 Rivet 75%		A S1 14'-13' E	
	U14'W-U13'W	Underside of top cover at U14'W	1/16" - 1/8"		A S1 14'-13' W	
	U15'W-U14'W	North end stay plate edges	1/16" to ragged edges		A S1 14'-13' W	A,S1,15'-14',N,7
	U15'W-L14'W	All lower laces	1/16" - 1/8"		A S1 14'-13' W	A,S1,15'-14',S,14
						A,S1,15'-14',DWN,16
		Lower middle stiffener plate top surface	1/16"		A S1 14'-13' W	A,S1,15'-14',DWN,5
	L15'W-L14'W	North lower and upper stay plate edges	1/16" to ragged edge		A S1 14'-13' W	
	L14'W-U14'W	Inside channel faces	Heavy blistering		A S1 14'-13' W	
	U14'W-U13'	Underside of upper cover along east flange angle	1/16"		A S1 14'-13' W	
		North stay plate north edge	Ragged edge		A S1 14'-13' W	
	PP L13'W	Inside faces of gussets	1/16"		A S1 14'-13'	A,S1,13'-12',S,9

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	U13'W-L12'W	South lower stay plate edge Upper middle stiffener plate, top edge	1/16" to ragged edge 1/8"		A S1 14'-13' W A S1 14'-13' W	A,S1,13'-12',S,6
	U13'E-U12'E	North end at U12'E connection angle at middle vertical stiffener plate		(7)	A S1 12'-11' E	A,S1,13'-12',N,10
	PP L12'E	Inside faces of gussets	1/16"		A S1 12'-11'E1	A,S1,12'-11'S,1 A,S1,12'-11',SE,2
	U12'E-U11'E	±10 Laces	1/8" - 1/4" at edges		A S1 12'-11'E2	A,S1,12'-11',N,8
	L12'E-L11'E	North upper stay plate	1/16" - 1/8"		A S1 12'-11'E2	
	U13'W-U12'W	±7 Laces	1/8"		A S1 12'-11'W1	
	L12'W-U12'W	Inside channel faces Bottom portion at L12'W	Heavy blistering 1/8" - 3/16"		A S1 12'-11'W1 A S1 12'-11'W1	 A,S1,12'-11',NE,4
	L12'W-L11'W	South end fill plates at upper and lower flange angles		(8)	A S1 12'-11'W1	A,S1,12'-11',SE,3 A,S1,12'-11',SW,9 A,S1,12'-11',SE,10
	PP L12'W	Gusset outside face	Blistering		A S1 12'-11'W1	A,S1,12'-11',W,5
	U12'W-U11'W	±50% Laces	1/16"		A S1 12'-11'W2	
	L11'W-L10'W	South upper and lower stay plates inside surfaces	1/16"		A S1 12'-11'W2	A,S1,11'-10',S,4 A,S1,11'-10',UP,5
	U11'E-L10'E	±10 Laces Lacing rivets on underside	1/16" ±6 Rivets 50%		A S1 10'-9' E A S1 10'-9' E	

Notes: (7) OSL of connection angle is lifted ±1/4" by layered rust for a length of ±10".
(8) Fill plate on lower west side is ragged and lifted ±1" by layered rust; upper plates also lifted by layered rust.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	L10'E-U10'E	Lower north stay plate bottom edge	1/16" - 1/8"		A S1 10'-9' E	
	L10'E-L9'E	South upper stay plate lower edge	1/16" to ragged edge		A S1 10'-9' E	
	L10'E-U10'E	±60 Laces	1/16" - 1/8"		A S1 10'-9' E	
	L10'E-U9'E	±20 Laces Lacing rivets	1/16" - 1/8" 5 Rivets 50%		A S1 10'-9' E A S1 10'-9' E	
	L10'E-L9'E	±20 Laces	1/16" - 1/8"		A S1 10'-9' E	
	L11'W-L10'W	North end upper stay plate top surface and north edge	1/8" pitting over ±50% of area and 50-75% loss at north edge		A S1 10'-9' W	
	L11'W-L10'W	North end lower stay plate top surface and north edge	50-75% loss from pitting over ±50% of area with north edge ragged		A S1 10'-9' W	
S2	U9'E-U8'E	±7 Laces	Knife to ragged edges		A S2 9'-8' E1	A,S2,9'-8',S,2
	U9'E-L8'E	±9 Laces	Knife edge to 100% loss		A S2 9'-8' E1	
	U9'W-U8'W	±8 Laces	Ragged edges		A S2 9'-8' W1	A,S2,9'-8',S,1
	PP U9'W	Vertical stiffener at splices of upper chords, bottom edge	Ragged edge		A S2 9'-8' W1	A,S1,10'-9',N,1 A,S1,10'-9',N,2
	L9'W-L8'W	North end, east bottom flange rivets	3 Rivets 50-75%		A S2 9'-8' W2	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S2	U9'W-L8'W	±35 Laces	50-70% loss and ragged edges		A S2 9'-8' W1	A,S2,9'-8',S,3
	L10'W-L9'W	North upper stay plate	1/16" - 1/8", pitting over ±50% of area		A S2 9'-8' W1	
	L8'W-U7'W	South upper stay plate	1/16"-1/8" over ±75% of area		A S2 9'-8' W2	
	PP L8'W	Inside faces of gussets	1/16" spots		A S2 9'-8' W2	
	U9'W-L8'W	North upper stay plate, lower edge	Knife-edged		A S2 9'-8' W2	
	L8'E-L7'E	North end upper stay plate top surface	1/16" - 1/8" pitting over ±50% of area		A S2 7'-6' E	
	L8'E-L7'E, 7' 6'	North end lower flange rivets	3 Rivets 50%		A S2 7'-6' E	
	L7'E-L6'E, 6' 5'	South end lower flange rivets	6 Rivets 50%		A S2 7'-6' E	
	PP U6'E	Inside and outside faces of gussets	1/16" spots		A S2 7'-6' E	
	PP U5'E	Inside and outside faces of gussets	1/16" spots		A S2 5'-4' E	
	L6'E-L5'E	North upper stay plate underside	1/16"-1/8" over ±10% of area		A S2 5'-4' E	
	L5'E-U5'E	Inside and outside faces of channels	Blistering, 1/16"-1/8"		A S2 5'-4' E	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S2	L5'E-L4'E	South upper stay plate underside	1/16"-1/8" over ±50% of area		A S2 5'-4' E	
	PP L5'E	Inside faces of gussets	1/16"-1/8" spots		A S2 5'-4' E	
		Middle vertical stiffener plate at chord splice	1/16"-1/8"		A S2 5'-4' E	
	PP U4'E	Inside faces of gussets	1/16"-1/8" spots		A S2 5'-4' E	
	U4'E-U3'E	South stay plate	1/16"-1/8" pitting		A S2 5'-4' E	
	L4'E-U4'E	Inside face of channels at bottom	1/16"-1/8"		A S2 5'-4' E	
	U5'E-L4'E	North upper stay plate top surface	1/16"-1/8" over ±30% of area		A S2 5'-4' E	
		North lower stay plate top surface	1/16"-1/8" over ±50% of area		A S2 5'-4' E	
		Connection angles of middle stiffener plate at L4'E, lower ends		(9)	A S2 5'-4' E	
	L5'E-L4'E	Inside faces of north end of chord	1/16'-1/8" spots		A S2 5'-4' E	
	PP L4'E	Inside faces of gussets along vertical edges	1/16"-1/8"		A S2 5'-4' E	
		Middle vertical stiffener plate at chord splice	1/16"-1/8" over ±50% of area		A S2 5'-4' E	

Note: (9) Ends of connection angles OSL bowed ±3/8" and ±1/4" by layered rust.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S2	L4'E-U3'E	South upper stay plate top surface	1/16"-1/8" over ±50% of area		A S2 5'-4' E	
		South lower stay plate top surface	1/16"-1/8" over ±70% of area		A S2 5'-4' E	
		Between west cover plate and diagonal lower flange		(10)	A S2 5'-4' E	
	L4'E-L3'E	All laces	1/16"-1/8"		A S2 5'-4' E	
		South end inside faces	1/16"-1/8" spots		A S2 5'-4' E	
		North end upper stay plate	1/16"-1/8" over ±10% of area		A S2 5'-4' E	
	L4'E-U4'E	Inside and outside faces of channels	1/16"-1/8" with blisters		A S2 5'-4' E	
	PP L5'W	Inside faces of gussets along vertical angles	1/16"-1/8"		A S2 5'-4' W	
		Middle vertical stiffener plate at chord splice	1/16" over ±75% of area		A S2 5'-4' W	
	L5'W-L4'W	South upper stay plate underside	1/8" spots		A S2 5'-4' W	
	U5'W-L4'W	North lower stay plate top surface	1/16"-1/8" over ±50% of area		A S2 5'-4' W	
		Lower end of east connection angle of middle stiffener plate		(11)	A S2 5'-4' W	
	L4'W-U4'W	Inside channel face at bottom	1/16"-1/8" spots		A S2 5'-4' W	
	L5'W-L4'W	North end inside faces	1/16"-1/8" spots		A S2 5'-4' W	

Notes: (10) Layered rust between cover plate and flange angle from 0 - ±3/16" full length.
(11) OSL lifted ±3/8" by layered rust.

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Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S2	L4'W-U3'W	South end inside channel face	1/8"-3/16"		A S2 5'-4' W	
		South lower stay plate top surface	1/16"-1/8"		A S2 5'-4' W	
		Lower end of west connection angle of middle stiffener plate at PP L4'W ±40% lower laces		(12)	A S2 5'-4' W	
	L4'W-L3'W	South end inside channel faces	1/16"-1/8" spots		A S2 5'-4' W	
	L3'E-U3'E	Inside channel faces and west outside face	1/16"-1/8" spots under blisters		A S2 3'-2' E	
	PP L3'E	Lower gusset inside PP top surface and north edge	1/16"-3/16" pitting, ragged edge		A S2 3'-2' E	
	U3'E-U2'E	North stay plate top surface	1/16"-1/8"		A S2 3'-2' E	
	PP U2'E	Outside face of west gusset	1/16" spots		A S2 3'-2' E	
	L3'E-L2'E	±50% of laces	1/16"-1/8"		A S2 3'-2' E	
		North end, vertical stiffener plate at chord splice both sides	1/16"-1/8" over ±50% of area		A S2 3'-2' E	
	U3'E-L2'E	North end, middle stiffness plate top surface	1/16"-1/8" over ±30% of area		A S2 3'-2' E	
	L2'E-U2'E	Channel faces	1/16"-1/8" blistering		A S2 3'-2' E	A,S2,3'-2', SE,8
	PP L2'E	Inside face of gussets	1/16"-1/8" spots		A S2 3'-2' E	

Note: (12) OSL lifted ±1/4" by layered rust.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S2	L2'E-U1'E	South end lower stay plate top surface	1/16"-1/8" over ±75% of area		A S2 3'-2' E	
		South end middle stiffener plate top surface	1/16"-1/8" over ±50% of area		A S2 3'-2' E	
		Lower end of west connection angle of middle stiffener plate		(13)	A S2 3'-2' E	
	U3'E-L2'E	Lower end of west connection angle of middle stiffener plate		(14)	A S2 3'-2' E	
	L2'E-L1'E	All laces	1/32"-1/8" spots		A S2 3'-2' E	
	L4'W-U3'W	±60% lower laces	1/16" - 1/8"		A S2 3'-2' W	
	U3'W-L2'W	±70% laces	1/16" - 1/8"		A S2 3'-2' W	
	PP U2'W	Inside and outside faces of gussets	1/16" spots		A S2 3'-2' W	
	L3'W-U3'W	Lower north stay plate inside face	1/16"-1/8" over ±20% of area		A S2 3'-2' W	
	PP L3'W	Inside face of gussets	1/16" - 1/8"		A S2 3'-2' W	
		Lower gusset, top surface inside PP	1/16" - 3/16" spots		A S2 3'-2' W	
	U3'W-L2'W	North end upper stay plate top surface	1/32"-1/8" over ±50% of area		A S2 3'-2' W	
		North end at L2'W inside west face	1/8"-3/16"		A S2 3'-2' W	
		North end middle stiffener plate top surface	1/16"-1/8" over ±25% of area		A S2 3'-2' W	
		Connection angle of middle stiffener plate at north end		(15)	A S2 3'-2' W	

Notes:
(13) OSL lifted ±3/8" by layered rust.
(14) OSL lifter ±3/8" by layered rust.
(15) OSL of west angle bowed ±3/8" by layered rust.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S2	L2'W-U2'W	Inside channel faces at L2'W	1/16" - 1/8"		A S2 3'-2' W	
	L2'W-U1'W	South end lower stay plate top surface	1/16"-1/8" over ±30% of area		A S2 3'-2' W	
		South end middle stiffener plate top surface	1/16"-1/8" over ±75% of area		A S2 3'-2' W	
	PP L2'W	Lower gusset inside PP top surface	1/16"-1/8" over ±50% of area		A S2 3'-2' W	
		Middle vertical stiffener plate at chord splice, south face	1/16"-1/8" over 100% of area		A S2 3'-2' W	
	U3'W-L2'W	Lower east angle of diagonal and north end		(16)	A S2 3'-2' W	
	U1'E-L0'E	South end lower stay plate edge		(17)	A S2 1'-0' E	
	L1'E-U0'E	Inside channel faces	1/16"-1/8" under blisters		A S2 1'-0' E	
	PP L1'E	Inside gusset faces along vertical channel edges	1/16" - 1/8"		A S2 1'-0' E	
	L1'E-L0'E	±25% laces, top surfaces	1/16" - 1/8"		A S2 1'-0' E	
	U1'E-U0'E	North end, ends of chord angles		(18)	A S2 1'-0' E	A,S2,1'-0',SE,9
	U1'E-L0'E	North end, middle stiffener plate top surface	1/16"-1/8" over ±75% of area		A S2 1'-0' E	
		North end upper stay plate top surface	1/16"-1/8" over ±25% of area		A S2 1'-0' E	

Notes:
(16) Corner of vertical leg lifted out ±1/2" by layered rust.
(17) ±1/2" layered rust between lower west angle and stay plate for ±6".
(18) Vertical legs of the four angles are bent from ±1/4" to ±3/8" by layered rust.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S2	PP LO'E	Inside face of east gusset and along vertical channel edge	1/16"-1/8" spots		A S2 1'-0' E	
	Ul'W-UO'W	±50% Laces	1/16"-1/8"		A S2 1'-0' W	
	PP UO'W	Outside surface of east gusset	1/16"-1/8" over ±50% of area		A S2 1'-0' W	
	Ll'W-Ul'W	Inside channel faces	1/32"-1/8" under blisters		A S2 1'-0' W	
	PP Ll'W	Inside faces of gussets along vertical channel edges	1/16" - 1/8"		A S2 1'-0' W	
	Ll'W-LO'W	±50% Laces	1/16" - 1/8"		A S2 1'-0' W	
		4th lacing from north end	Ragged edge		A S2 1'-0' W	
		2nd lacing from north	100% loss		A S2 1'-0' W	A,S2,1'-0',N,2
		Bottom gusset at north end, top surface	1/16"-1/8" over ±50% of area		A S2 1'-0' W	
	Ul'W-LO'W	North end upper stay plate top plate top surface	1/16"-1/8" over ±75% of area		A S2 1'-0' W	
		North end lower stay plate top surface	1/16"-1/8" over ±75% of area		A S2 1'-0' W	
	LO'W-UO'W	±80% Laces	1/16"-1/8"		A S2 1'-0' W	
		Lacing rivets	2 Rivets 50%		A S2 1'-0' W	
	PP LO'W	Inside surface of east gusset	1/16"-1/8" over ±50% of area		A S2 1'-0' W	
		Outside surface of east gusset	1/16"-1/8" over ±25% of area		A S2 1'-0' W	

B

FLOOR BEAMS & STRINGERS

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
		FLOOR BEAMS				
S3	FB 0 N	Last two panels of web west end	1/16"-1/8" pitting over 100% of surface		B S3 0-1	
	FB 1 N	East end, lower flange rivets	± 3 Rivets 50%		B S3 1-2	
		West end, lower flange rivets	± 4 Rivets 75%		B S3 1-2	
		~~East~~ West end top surface of lower flange	± 4 Rivets 100% 1/16"-1/8"		B S3 1-2	
	FB 2 S	East end lower flange rivets	1 Rivet 50%		B S3 1-2	
	FB 2 N	East end lower flange rivets	2 Rivets 50%		B S3 2-3	
		East end top surface of lower flange	1/16"-1/8"		B S3 2-3	
		West end lower flange rivets	± 7 Rivets 75%-100%		B S3 2-3	
		West end top surface of lower flange	1/16"-1/8"		B S3 2-3	
		West stiffener, bottom of OSL	1/16"-1/8"		B S3 2-3	
	FB 3 S	East end lower flange rivets	2 Rivets 50%		B S3 2-3	
	FB 3 N	West end lower flange rivets	± 7 Rivets 75%-100%		B S3 3-4	B,S3,3-4,S,4
	FB 4 N	~~East~~ end lower flange rivets	3 Rivets 50%		B S3 4-5	
		West end top surface of lower flange	1/16"-1/8"		B S3 4-5	
	FB 4 N	Sidewalk channel clip angles on top flange at east end and rivets	1/16"-1/8" 4 Rivets 50%		B S3 4-5	
	FB 5 S	~~West~~ end lower flange rivets	3 Rivets 75%		B S3 4-5	
		West end, edge of top flange OSL	1/16"-1/8" for ± 6"		B S3 4-5	
		Side walk channel clip angles on top flange at eastend and rivets	2 Rivets 50%		B S3 4-5	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S3	FB 5 S	East end top surface of bottom flange	1/16"-1/8"		B S3 4-5	
	FB 5 N	West end lower flange rivets	± 16 Rivets 75%-100%		B S3 5-6	
		West end, top surface of lower flange	1/16"-1/8"		B S3 5-6	
		West end, edge of top flange	1/16-1/8" for ± 6"		B S3 5-6	
		Stiffener at west end	1/16"-1/8" for ± 30"		B S3 5-6	
		East end lower flange rivets	4 Rivets 50-75%		B S3 5-6	
		East end top surface of lower flange	1/16"-1/8"		B S3 5-6	
		East end, edge of top flange	1/16"-1/8" for ± 40"		B S3 5-6	
	FB 6 S	Side walk channel clip angle rivets at east end	2 Rivets 75%		B S3 5-6	
	FB 6 N	West end lower flange rivets	4 Rivets 75%		B S3 6-7	
		West end top surface of lower flange	1/16"-1/8"		B S3 6-7	
		East end lower flange rivets	2 Rivets 50%		B S3 6-7	
		East end top surface of lower flange	1/16"-1/8"		B S3 6-7	
		East end top flange edge and top surface	1/16"-1/8"		B S3 6-7	
	FB 7 S	East end, top surface of top flange	1/16"-1/8" for ± 24"		B S3 6-7	
	FB 7 N	West end, edge of top flange	1/16"-1/8" for ± 4"		B S3 7-8	
		East end top surface of bottom flange	1/16"-1/8"		B S3 7-8	
		Third Stiffener from east end, OSL	1/16"-1/8"		B S3 7-8	
		East end top surface of upper flange	1/16"-1/8"		B S3 7-8	
		Sidewalk channel clip angle at east end, rivets	4 Rivets 50-75%		B S3 7-8	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S3	FB 8 S	Sidewalk channel clip angle at east end, rivets	3 Rivets 75%		B S3 7-8	
	FB 8 N	East end top surface of top flange	1/16"-1/8" for ± 24"		B S3 7-8	
		Stiffener at ST-9, OSL	100% loss		B S3 7-8	
		East side bottom flange top surface in vicinity of ST-9	1/16"-1/4" over ± 30"		B S3 7-8	
		Bottom cover plate rivets in vicinity of ST-9	3 Rivets 50%		B S3 7-8	
	FB 9 S	West end bottom flange rivets	2 Rivets 50% 5 Rivets 75%		B S3 8-9	
		West end top surface of bottom flange	1/16"-1/8"		B S3 8-9	
		West end underside and edge of top flange	1/16"-1/8" for ± 5"		B S3 8-9	
		West end top surface of bottom flange at ST-1	± 3/16" for ± 6"		B S3 8-9	
S1	FB 9 N	West end lower flange rivets	± 6 Rivets 25-50% ± 7 Rivets 75-100%		B S1 9-10	
		West end top surface of lower flange	1/16"-1/8"		B S1 9-10	
		West end edge of top flange	1/16"-1/8" for ± 5'		B S1 9-10	
		East end lower flange rivets	3 Rivets 50%		B S1 9-10	
		Bottom cover rivets at ST-8	4 Rivets 75%		B S1 9-10	
		East end edge of top flange	1/16"-1/8" for ± 5'		B S1 9-10	
	FB 10 S	Edge of lower flange	1/16"-1/8" full length		B S1 9-10	
	FB 10 N	Support bracket for sidewalk channel on west side	1/4" pitting to 100% loss		B S1 10-11 2	B,S1,10-11,SW,14
		Web around portal area	1/16"-1/8" pitting		B S1 10-11 2	
	FB 11 S	East end top surface of lower flange	1/8"-3/16" pitting ± 30"		B S1 10-11	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	FB 11 S	East end top surface of top flange under timber insulation	1/32"-1/8"		B S1 10-11	
		West end lower flange rivets	2 Rivets 75%		B S1 10-11	
	FB 11 N	West end lower flange rivets	5 Rivets 50% 2 Rivets 75%		B S1 10-11	
		West end top surface of lower flange	1/16"-1/8"		B S1 11-12	
		West end edge of top flange	1/16"-1/8" for ± 30"		B S1 11-12	
		East end at ST-8, top surface of bottom flange	1/8"-3/16" pitting for ± 34"		B S1 11-12	B,S1,11-12,DWN,16 B,S1,H-12,W,14 B,S1,11-12,E,15
	FB 12 S	East ent top surface of upper flange under timber insulation	1/16"-1/8"		B S1 11-12	
		West end, edge of top flange	1/16"-1/8" for ± 24"		B S1 11-12	
	FB 12 N	West end, stiffener at ST-1, at bottom	100% loss		B S1 12-13	
		West end edge of top flange	1/16"-1/8"		B S1 12-13	
		East side bottom flange	1/16"-1/8" for ± 26"		B S1 12-13	
		East side edge of upper flange	1/16"-1/8" for ± 28"		B S1 12-13	
		Bottom cover plate edge	1/16"-1/8" for ± 7'		B S1 12-13	
	FB 13 S	East end lower flange rivets	2 Rivets 50% 2 Rivets 75%		B S1 12-13	
		East ent top surface of lower flange	1/16"-1/8"		B S1 12-13	
		West end top and edge of bottom flange	1/16"-1/8" for ± 14"		B S1 12-13	
		West end edge of top flange	1/16"-1/8" for ± 48"		B S1 12-13	
	FB 13 N	West end top and bottom flange	1/16"-1/8"		B S1 13-14	
		Stiffener at west end, bottom portion	Knife edge and ragged for ± 5"		B S1 13-14	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	FB 13 N	East end top surface of lower flange	1/16"-1/8" to ragged edge for ± 20"		B S1 13-14	B,S1,13-14,W,4
		East end lower flange rivets	± 8 Rivets 50% 2 Rivets 75%		B S1 13-14	
		East end top surface of top flange at clip angles	1/16"-1/8"		B S1 13-14	
	FB 14 S	East end top surface of upper flange next to clip angle	1/8"-3/16" pitting		B S1 13-14	B,S1,13-14,N,5
	FB 14 N	West end lower flange rivets	2 Rivets 50%		B S1 13-14	
		West end upper and lower flange	1/16"-1/8"		B S1 13-14	
		East end of bottom cover plate	± 7 Rivets 50%		B S1 14-15	
	FB 15 S	East end bottom cover rivets	± 4 rivets 50%		B S1 14-15	
		West end edge of top flange	1/16"-1/8"		B S1 14-15	
	FB 15 N	West end top and bottom flange	1/16"-1/8"		B S1 15-16	
		West end bottom flange rivets	3 Rivets 25-50%		B S1 15-16	
		East end bottom flange	1/16"-1/8"		B S1 15-16	
	FB 16 S	East end top and bottom flange	1/16"-1/8"		B S1 15-16	
		West end top flange	1/16"-1/8"		B S1 15-16	
	FB 16 N	East and west ends top and bottom flanges	1/16"-1/8"		B S1 16-15'	
		West end lower flange rivets	± 6 Rivets 50%		B S1 16-15'	
		East end top surface of lower flange at ST-9	± 1/4" loss		B S1 16-15'	
		East end lower flange rivets	4 Rivets 50%		B S1 16-15'	
	FB 15' S	East and west ends upper and lower flanges	1/16"-1/8"		B S1 16-15'	
	FB 15' N	East and west ends upper and lower flanges	1/16"-1/8"		B S1 15'-14'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	FB 15' N	Bottom cover plate rivets	± 8 Rivets 50% 4 Rivets 75%		B S1 15'-14'	
	FB 14' S	East and west ends upper and lower flanges	1/16"-1/8"		B S1 15'-14'	
		West end lower flange rivets	3 Rivets 50%		B S1 15'-14'	
	FB 14' N	Bottom cover rivets	2 Rivets 75%		B S1 14'-13'	
	FB 13' S	East end top and bottom flange	1/16"-1/8"		B S1 14'-13'	
		West end bottom flange rivets	± 17 Rivets 50-75%		B S1 14'-13'	
	FB 13' N	East and west ends upper and lower flanges	1/16"-1/8"		B S1 13'-12'	
		West end lower flange rivets	4 Rivets 50%		B S1 13'-12'	
		Bottom cover plate rivets	4 Rivets 25-50%		B S1 13'-12'	
	FB 12' S	First stiffener from east end	Knife edge & 100% loss		B S1 13'-12'	
		East end lower flange rivets	1 Rivet 50%		B S1 13'-12'	
		West end lower flange rivets	1 Rivet 50% 5 Rivets 75%		B S1 13'-12'	
	FB 11' S	East and west ends lower and upper flanges	1/16"-1/8"		B S1 12'-11'	
		East end lower flange rivets	2 Rivets 50%		B S1 12'-11'	
		West end lower flange rivets	± 20 Rivets 50-75%		B S1 12'-11'	
	FB 11' N	West end lower flange rivets	± 11 Rivets 50-75%		B S1 11'-10' 1	
		East end top surface of lower flange	1/16"-1/8"		B S1 11'-10' 1	
		East end lower flange rivets	± 5 Rivets 50%		B S1 11'-10' 1	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S1	FB 10' N	Stiffener at ST-1		(1)	B S1 10'-9'	B,S1,10'-9',SE,10
		Upper and lower flanges at ST-3, surfaces	1/8" pitting		B S1 10'-9'	
		East end lower flange rivets	±5 Rivets 50%			
	FB 9' S	West end top surface of lower flange	1/16"-1/8"		B S1 10'-9'	
		West end lower flange rivets	±11 rivets 50-75%		B S1 10'-9'	
S2	FB 9' N	West end lower flange rivets	±8 rivets 25-50%		B S1 9'-8'	
		West end, edge of bottom flange	1/16"-1/8"		B S2 9'-8'	
	FB 8' S	East end lower flange rivets	±5 Rivets 50%			
	FB 8' N	West end lower flange	1/16"-1/8"		B S2 8'-7'	
	FB 7' S	West end lower flange	1/16"-1/8"		B S2 8'-7'	
		First stiffener from west at bottom on OSL	1/16"-1/8"		B S2 8'-7'	
		Second and third stiffeners from east end on OSL at bottom	1/8" pitting		B S2 8'-7'	
		Lower flange from ST-7 to east end	1/16"-1/8" pitting		B S2 8'-7'	
	FB 7' N	Clip angles for sidewalk channel at east end	1/16"-1/8" over 100%		B S2 7'-6'	
		East end bottom flange top surface from ST-9 to east end	1/8" pitting		B S2 7'-6'	
	FB 6' S	East end top surface of top flange and sidewalk clip angle	1/16"-1/8"		B S2 7'-6'	
		Top surface of lower flange at ST-9 and stiffener OSL	1/8" pitting		B S2 7'-6'	
		West end lower flange rivets	1 Rivet 50%		B S2 7'-6'	

Note: (1) Stiffener is bowed out on the west side from the stringer web ±1/2" by layered rust for ±9" long.

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
S2	FB 5' S	West end lower flange rivets	± 5 Rivets 50%			B,S2,6'-5',NW,3
			± 10 Rivets 75%		B S2 6'-5'	B,S2,6'-5',NW,4
		Stiffener at ST-1, OSL	1/16"-1/8"		B S2 6'-5'	
		East end, lower flange in last three panels and stiffener OSL at ST-9	1/16"-1/8" pitting		B S2 6'-5'	
	FB 5' N	West end, lower flange rivets	± 5 Rivets 75-100%		B S2 5'-4'	
	FB 4' S	East end, lower flange rivets	1 Rivet 50% ± 6 Rivets 75%		B S2 5'-4'	
		Stiffener at ST-1, OSL at bottom	1/8"-1/4" pitting		B S2 5'-4'	
	FB 3' S	East end, lower flange rivets	1 Rivet 50%		B S2 4'-3'	
		East end, top surface of lower flange	1/16"-1/8" pitting		B S2 4'-3'	
	FB 2' N	West end, upper and lower flanges	1/16"-1/8"		B S2 3'-2'	
	FB 2' N	West end lower flange rivets	2 Rivets 50%		B S2 2'-1'	
	FB 1' S	East end, lower flange rivets	± 6 Rivets 75%		B S2 2'-1'	
	FB 1' S	Stiffener at ST-1 bottom of OSL	1/8"-1/4" pitting and 100% loss		B S2 2'-1'	B,S2,2'-1',NW,4
	FB 0' S	East end at ST-9 web surface	1/16"-1/8" pitting		B S2 1'-0' 1	
		West end, last panel of web and bottom flange	1/16"-1/8" pitting		B S2 1'-0' 1	
	FB 0' N	West end, last two panels of web	1/16"-1/8" pitting		B S2 1'-0'	
		East end, underside of top flange	1/16"-1/8"		B S2 1'-0'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
		STRINGERS				
4-5	ST-1	South end bottom flange	1/16"-1/8" for ± 10'		B S3 4-5	
5-6	ST-1	Underside of top flange	1/16"-1/8" for ± 3/4 of span		B S3 5-6	
		South end, bottom flange top surface and edge	1/16"-1/4" pitting for ± 30"		B S3 5-6	
	ST-9	Top surface of bottom flange	1/16"-1/8" for ± 20'		B S3 5-6	B,S3,5-6,SW,5 B,S3,5-6,W,6
6-7	ST-1	South end top surface and edge of lower flange	1/16"-1/8" with ragged edge for ±36"		B S3 6-7	
	ST-9	Top surface of bottom flange and edge	1/16"-1/8" with ragged edge for ± 20'		B S3 6-7	
		South end, bottom of web	1/16"-1/8" for ± 8"			
7-8	ST-1	Top surface of bottom flange and edge	1/16"-1/8" with ragged edge for ±15'		B S3 7-8	
	ST-9	Web at south end	1/8"-1/4" pitting for 17" with hole just above bottom flange		B S3 7-8	
		Top surface of bottom flange	1/16"-1/8" pitting full length		B S3 7-8	
		South end, edge of bottom flange	1/8" to ragged edge for ± 18"		B S3 7-8	
8-9	ST-1	Underside of top flange	1/16"-1/8" pitting for ± 10'		B S3 8-9	
		Top surface of bottom flange and edge at south end	1/16"-1/8" pitting for ± 8' with ragged edge for ± 4'		B S3 8-9	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
8-9	ST-9	Underside of top flange	1/16"-1/8" pitting for ± 10'		B S3 8-9	
		Top surface of bottom flange	1/16"-1/8" pitting for ± 25'		B S3 8-9	
9-10	ST-1	Top of bottom flange and edge	1/16"-1/8" for ± 20'		B S1 9-10	
		Bottom of web at south end	1/16"-1/8" for ± 36"		B S1 9-10	
	ST-5	Top surface of bottom flange and edge	1/16"-1/8" for ± 48"		B S1 9-10	
	ST-7	Top surface of bottom flange at south end	1/16"-1/8" for ± 6"		B S1 9-10	
	ST-9	Top surface of bottom flange and underside of top flange	1/16"-1/8" pitting full length		B S1 9-10	
10-11	ST-1	Top surface of bottom flange and edge	1/16"-1/8" pitting for ±20' with ragged edge		B S1 10-11	
	ST-9	Top surface of bottom flange	1/16"-1/8" pitting full length		B S1 10-11	
		South end rivets thru stiffener angle	± 13 Rivets 50-75%		B S1 10-11	
11-12	ST-9	Top surface of lower flange	1/16"-3/16" pitting full length		B S1 11-12	B,S1,11-12,S,2
		Underside of top flange	1/16"-1/8" pitting		B S1 11-12	
12-13	ST-9	Top surface of bottom flange and edge at north end	1/16"-1/8" for ± 8'		B S1 12-13	
13-14	ST-9	Top surface of bottom flange and edge	1/16"-1/8" for ± 22'		B S1 13-14	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
14-15	ST-9	Underside of top flange	1/16" pitting full length		B S1 13-14	
		Top surface of lower flange	1/8" pitting full length		B S1 14-15	B,S1,14-15,S,5 B,S1,14-15,N,9
15-16	ST-7	Top surface of bottom flange	1/16"-1/8" pitting for ± 15'		B S1 15-16	
	ST-8	Underside of bottom flange	1/16"-1/8" pitting		B S1 15-16	
	ST-9	Top surface of bottom flange and edge	1/16"-1/8" full length		B S1 15-16	B,S1,15-16,SW,9
16-15'	ST-1	Underside of top flange	1/16"-1/8" pitting		B S1 16-15'	
	ST-7	Edge of bottom flange	1/16"-1/8" pitting full length		B S1 16-15'	
	ST-9	Underside of top flange	1/16"-1/8" pitting full length		B S1 16-15'	
		Top surface of bottom flange	1/16-1/8" pitting full length		B S1 16-15'	
15'-14'	ST-7	Edge of bottom flange	1/16"-1/8" pitting full length		B S1 15'-14'	
	ST-8	Top surface of bottom flange and edge	1/16"-1/8" pitting full length		B S1 15'-14'	
	ST-9	Top surface of bottom flange	1/16"-1/8" pitting full length		B S1 15'-14'	
14'-13'	ST-9	Top surface of bottom flange east side	1/16"-1/8" pitting full length		B S1 14'-13'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
14'-13'	ST-9	Top surface of bottom flange west side	1/16"-1/8" pitting for ± 20'		B Sl 14'-13'	
		Underside of top flange	1/16"-1/8" pitting for ± 10'		B Sl 14'-13'	
		Bottom of web at north end	1/16"-1/8" pitting for ± 14"		B Sl 14'-13'	
13'-12'	ST-1	Top surface of bottom flange at north end	1/16"-1/8" pitting for ± 10'.		B Sl 13'-12'	
	ST-9	Top surface of bottom flange and underside of top flange	1/16"-1/8" pitting ± 24'		B Sl 13'-12'	
		Bottom of web	1/16"-1/8" for ± 12'		B Sl 13'-12'	B,Sl,13'-12'.SW,1
12'-11'	ST-1	Top surface of bottom flange at north end	1/16"-1/8" pitting for ± 8'		B Sl 13'-12'	
	ST-1 to ST-9	Web and flange	Typical surface rusting		B Sl 12'-11'	B,Sl,12'-11',NW,11
		Top surface of bottom flange	1/16"-1/8" pitting for ± 17'		B Sl 12'-11'	
11'-10'	ST-9	Top surface of bottom flange and edge	1/16"-1/8" pitting for ± 20'		B Sl 11'-10'	
10'-9'	ST-1	Top surface of bottom flange	1/8"-3/16" pitting in spots full length, 1/4" pitting ±30" at south end		B Sl 10'-9'	
		Underside of top flange	1/16"-1/8" pitting full length		B Sl 10'-9'	
		Base of web at north and south end	± 3/16" pitting for 18" at north ± 3/16" for 12" at south		B Sl 10'-9'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
10'-9'	ST-3	Top surface of lower flange and base of web at south end	1/8"-3/16" pitting for ± 18"		B S1 10'-9'	
	ST-4	Top surface of lower flange	1/8" pitting full length		B S1 10'-9'	
		South end, base of web	± 3/16" pitting for ± 12"		B S1 10'-9'	
	ST-9	Edge of bottom flange	1/16"-1/8" pitting for ± 20'		B S1 10'-9'	
		North end base of web	1/16"-1/8" pitting with pin holes for ± 36"		B S1 10'-9'	
		South end top surface of bottom flange	± 1/4" pitting for ± 6"		B S1 10'-9'	
9'-8'	ST-1	Underside of top flange, north end	1/16"-1/8" pitting for ± 8'		B S2 9'-8'	
		Top surface of bottom flange at north end	1/16"-1/8" pitting for ± 18"		B S2 9'-8'	
		Top surface of bottom east flange south of mid span	1/8"-1/4" pitting with ragged edge		B S2 9'-8'	
	ST-9	Top surface of bottom flange	1/16"-1/8" pitting full length		B S2 9'-8'	
8'-7'	ST-1	Underside of top flange	1/16"-1/8" pitting for ± 24"		B S2 8'-7'	
	ST-9	Top surface of bottom flange	1/16"-1/8" pitting full length		B S2 8'-7'	
7'-6'	ST-1	Top surface of bottom flange at south end	1/16"-1/8" pitting for ± 3'		B S2 7'-6'	
	ST-9	Top surface of bottom flange at south end	1/16"-1/8" pitting for ± 14'		B S2 7'-6'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
6'-5'	ST-9	Underside of top flange and top surface of bottom flange	1/16"-1/8" pitting full length		B S2 6'-5'	
5'-4'	ST-1	Underside of top flange	1/16"-1/8" pitting for ± 3/4 span		B S2 5'-4'	
		Top surface of bottom flange	1/16"-1/8" pitting for ± 1/4 span		B S2 5'-4'	
		North end, at stiffener angle		(2)	B S2 5'-4'	
	ST-9	Underside of top flange	1/16"-1/8" pitting full length		B S2 4'-3'	
2'-1'	ST-9	North end base of web	1/8" pitting for ± 8"		B S2 2'-1'	
	Note (2)	± 1/8" of layered rust between web and stiffener angle for ± 3"				

C

DECK , SIDEWALK & WALKWAY

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
	DECK					
0-1		At south end, patch between stringers running east to west	Patch starting to fall out		C S3 0-1	
		North end between ST-3 and ST-8	Hairline cracks with some leaching		C S3 0-1	
		Sidewalk area along channel upper flanges	Spalling, average 4" x 8"		C S3 0-1	
		North end of sidewalk area, west side	± 12" x ± 16" spall with 4 rebars exposed		C S3 0-1	
			± 14" x ± 18" spall with 2 rebars exposed			C, S3, 0-1, S, 1
			± 4" x ± 8" spall with 1 rebar exposed			
1-2		South end between ST-4 and ST-5	± 4" x ± 30" spall		C S3 1-2	
		South end between ST-3 and ST-8 and north end between ST-2 and ST-9	Hairline to 1/16" cracks with some leaching		C S3 1-2	
		Sidewalk area at south end	± 8" x ± 14" spall with 1 rebar exposed		C S3 1-2	C, S3, 1-2, N, 1
			± 5" x ± 10" spall with 1 rebar exposed			C, S3, 1-2, SW, 5
			± 4" x ± 6" spall with 1 rebar exposed			
2-3		South end between ST-2 and ST-7	1/8", cracks		C S3 2-3	C, S3, 2-3, S, 4
		Between ST-3 and ST-8	Hairline cracks with leaching		C S3 2-3	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
2-3		South end between ST-2 and ST-3	Patch fallout ± 4" x ± 24"		C S3 2-3	
		East side of sidewalk area, along channel edge	± 12" spalls averaging 2" x 3"		C S3 2-3	
3-4		Between ST-2 and ST-7	Hairline to 1/16" cracks with leaching		C S3 3-4	
		South end between ST-2 and ST-3	± 4" x ± 30" spall		C S3 3-4	C, S3, 3-4, S, 3
		Along ST-7 upper flange	Slight spalling for ± 10'		C S3 3-4	
		Along ST-4 upper flange	Slight spalling for + 6'		C S3 3-4	
		West side of sidewalk	± 4" x ± 16" spall with 2 rebars exposed		C S3 3-4	C, S3, 3-4, N, 2
			± 1/8" cracks with spalling		C S3 3-4	
4-5		Between ST-2 and ST-8	Hairline to 1/16" cracks		C S3 4-5	
		Along top flange of ST-3 and ST-4	Spalling for ± 10'		C S3 4-5	
		West side of sidewalk area	Spalling with average spall 5" x 10" and 1" deep		C S3 4-5	
5-6		Between ST-2 and ST-8	Hairline to 1/16" with some leaching		C S3 5-6	
		South end of sidewalk area	± 12" x ± 14" spall with 1 rebar exposed		C S3 5-6	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
5-6		West side sidewalk area along channel flange	Slight spalling full length		C S3 5-6	
6-7		Between ST-2 and ST-8	Hairline to 1/16" cracks		C S3 6-7	
		Along top flange of ST-7	Patches spalling for ± 15'		C S3 6-7	
		West side of sidewalk area along channel edge	Spalling full length, average ± 8" x ± 12" with largest ± 10" x ± 24"		C S3 6-7	
7-8		Between ST-2 and ST-8	Hairline to 1/16" cracks with leaching		C S3 7-8	
		North end, east side of ST-2	± 4" x ± 10" spall with 2 rebars exposed		C S3 7-8	
		Along ST-3 on east side	Spalling for ± 15' with largest ± 5" x ± 12"		C S3 7-8	
		Along ST-3 on west side	Spalling for ± 8'		C S3 7-8	
		Sidewalk area along west channel	Spalling full length with average ± 8" x ± 10"		C S3 7-8	
8-9		Between ST-2 and ST-8	Hairline to 1/16" cracks with leaching		C S3 8-9	
		South end between ST-2 and ST-3	± 2" x ± 3" spall with 2 rebars exposed		C S3 8-9	
		Along ST-4 upper flange	Slight spalling full length		C S3 8-9	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
8-9		Along ST-7 upper flange	Spalling for ± 20' with average ± 3" x ± 4" and largest ± 4" x ± 12"		C S3 8-9	
		Along ST-8 upper flange	Spalling for ± 15'		C S3 8-9	
		Sidewalk area west side	Spalling full length with average spall ± 6" x ± 10"		C S3 8-9	C, S3, 8-9, UP, 11
9-10		Between ST-2 and ST-8	Hairline cracks with some leaching		C S3 9-10	
		Along all stringers	Slight spalling full length		C S3 9-10	
		Sidewalk area along west channel	± 10" x ± 14" spall with 1 rebar exposed ± 12" x ± 12" spall with 1 rebar exposed		C S3 9-10	
		South end between ST-5 and ST-6	Patch starting to spall		C S3 9-10	
10-11		South end between ST-2 and ST-8	Patch starting to spall		C S1 10-11	C, S1, 10-11, SW, 7
		Between ST-2 and ST-8	Hairline to 1/16" cracks with some leaching		C S1 10-11	
		Along ST-3 and ST-4	Slight spalling		C S1 10-11	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
10-11		Between ST-5 and ST-6 at south end	± 3" x ± 12" spall		C S1 10-11	
		Between ST-7 and ST-8 at south end	± 2 1/2" x 6" spall		C S1 10-11	
		Sidewalk area along channel edges	Slight spalling with honeycombing		C S1 10-11	
11-12		Between ST-2 and ST-7	Hairline cracks with slight leaching		C S1 11-12	
		South end between ST-6 and ST-7	± 2 1/2" x ± 4" spall with 2 rebars exposed		C S1 11-12	
12-13		At north and south ends between ST-2 and ST-6	Hairline cracks		C S1 12-13	
		Along top flanges of ST-3, ST-7	Slight spalling		C S1 12-13	
		Sidewalk area about midspan	± 8" x ± 24" spall		C S1 12-13	
		Sidewalk area along channel edges	± 14" x ± 18" spall with 1 rebar exposed		C S1 12-13	
		Sidewalk area along channel edges at north end	± 8" x ± 16" spall with 1 rebar exposed		C S1 12-13	
		Sidewalk area along east side	Spalling for approximately 3/4 of span with 2 rebars exposed		C S1 12-13	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
13-14		South end of sidewalk area	± 12" x ± 24" spall with 5 rebars exposed		C S1 13-14	
		Between ST-2 and ST-3	± 8" x + 8" spalls with 4 rebars exposed		C S1 13-14	C, S1, 13-14, S, 2
		South end between ST-3 and ST-4	± 2" x ± 24" spall with 4 rebars exposed		C S1 13-14	
		North end between ST-5 and ST-6	Spalling with 2 rebars exposed		C S1 13-14	
14-15		Between ST-2 and ST-7	Hairline cracks		C S1 14-15	
15-16		Along top flange of ST-3, ST-5, ST-6, ST-7	Slight spalling		C S1 15-16	
16-15'		Along ST-3, ST-6, ST-7	Slight spalling		C S1 16-15'	
		Sidewalk area at north and south ends	± 5" x ± 24" spall		C S1 16-15'	
			± 6" x ± 12" spall		C S1 16-15'	
15'-14'		Along ST-3, ST-6, ST-7	Slight spalling		C S1 15'-14'	
		Sidewalk area along channel edges	Spalling full length		C S1 15'-14'	
14'-13'		Along ST-3, ST-7, ST-8	Slight spalling		C S1 14'-13'	
		North end of sidewalk area	± 6" x ± 6" spall with 2 rebars exposed		C S1 14'-13'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
13'-12'		Between ST-2 and ST-3	± 3" x ± 5" spall with 2 rebars exposed		C S1 13'-12'	
		Sidewalk area	± 2" x ± 12" spall ± 4" x ± 12" spall ± 2½" x ± 8" spall with 1 rebar exposed ± 3" x ± 16" spall with 2 rebars exposed		C S1 13'-12'	
12'-11'		North end between ST-2 and ST-5	Honeycombed patches		C S1 12'-11'	
		South end between ST-2 and ST-3	Spalls with rebars exposed		C S1 12'-11'	
		Sidewalk area along west channel edge	Slight spalling for ± ½ span		C S 12'-11'	
11'-10'		North end between ST-2 and ST-8	Patch starting to spall		C S 11'-10'	
		South end between ST-2 and ST-8	Hairline cracks		C S1 11'-10'	
		Between ST-4 and ST-5	± 12" x ± 12" honeycombed area		C S 11'-10'	
		Sidewalk area, east side	± 12" x ± 12" spall with 2 rebars exposed		C S1 11'-10'	
			± 4" x ± 14" spall with 2 rebars exposed		C S 11'-10'	
10'-9'		Between ST-6 and ST-8	Hairline cracks with some leaching		C S1 10'-9'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
9'-8'		All stringer ends at corner of top flanges	Typical spalling		C S1 9'-8'	
		Along ST-3 to ST-6 upper flanges	Slight spalling		C S 9'-8'	
		Between ST-2 and ST-8	Hairline cracks with some leaching		C S1 9'-8'	
		Between ST-3 and ST-4	± 3" x ± 12" spall with 2 rebars exposed		C S1 9'-8'	
8'-7'		Between ST-6 and ST-7	Spall with 4 rebars exposed		C S1 9'-8'	
		Between ST-2 and ST-8 and at north and south ends	Hairline cracks with some leaching		C S1 9'-8'	
		Along ST-4, ST-7, ST-8 top flanges	Slight spalling		C S2 8'-7'	
7'-6'		Between ST-2 to ST-8	Hairline to 1/16" cracks with some leaching		C S2 7'-6'	
		Between ST-4 and ST-5 at south end	± 2½" x ± 14" spall with 4 rebars exposed		C S2 7'-6'	
		At all stringers, ends of upper flanges	Typical spalling		C S2 7'-6'	
		Sidewalk area along east channel	Spalling full length		C S2 7'-6'	
		Sidewalk area at north end	Spall with 3 rebars exposed		C S2 7'-6'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
6'-5'		Between ST-2 to ST-8	Hairline cracks with some leaching		C S2 6'-5'	
		Between ST-2 and ST-3	± 1½" x ± 3½" spall with 2 rebars exposed		C S2 6'-5'	
		Between ST-4 and ST-5	± 1½" x ± 2½" spall with 2 rebars exposed		C S2 6'-5'	
		Sidewalk area along all upper bracing members and channel flanges	Slight spalling		C S2 6'-5'	
5'-4'		Between ST-2 and ST-3	± 5" x ± 6" spall with 2 rebars exposed		C S 5'-4'	
		North end between ST-3 and ST-6	Honeycombed areas with leaching		C S2 5'-4'	
		South end between ST-3 and ST-5	Honeycombed areas ± 24" x ± 30"		C S2 5'-4'	
		North and south ends	Hairline cracks with typical spalling		C S2 5'-4'	
4'-3'		Between ST-2 and ST-8	Some hairline cracks with leaching		C S2 4'-3'	
		North end of sidewalk area	Spall with 2 rebars exposed		C S2 4'-3'	C, 52, 4'-3', N, 5
3'-2'		Bewteen ST-2 and ST-3	± 2½" x ± 3" spall with 2 rebars exposed		C S2 3'-3'	
			± 3½" x ± 4" spall with.2 rebars exposed		C S2 3'-2'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
3'-2'		Between ST-5 and ST-6 at north end	Honeycombed areas		C S2 3'-2'	
		Sidewalk area	± 12" x ± 30" spall with 4 rebars exposed		C S2 3'-2'	
			Spalling along upper bracing members		C S2 3'-2'	
2'-1'		Between ST-2 and ST-3	Patch spalling ± 2" x ± 4" with 2 rebars exposed		C S2 2'-1'	
		Along ST-3, ST-5, ST-6 top flange	Slight spalling		C S2 2'-1'	
		Between ST-3 and ST-4	± 2" x ± 2" spalling with 2 rebars exposed		C S2 2'-1'	
		At north and south ends	Hairline cracks		C S2 2'-1'	
		Sidewalk area south end	Spall with 2 rebars exposed			
			Slight spalling along all upper bracing members			
1'-0'		Between ST-2 and ST-3 at north end	Spall with 2 rebars exposed		C S2 1'-0'	
			Patch beginning to spall			
		At north end between ST-2 and ST-6	Patch starting to spall		C S2 1'-0'	
		Between ST-5 and ST-6	Spall with 2 rebars exposed		C S2 1'-0'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
1'-0'		South end	Honeycombed areas		C S2 1'-0'	
		Along ST-3 and ST-5	Slight spalling		C S2 1'-0'	
		Between ST-2 and ST-8	Hairline cracks with some leaching		C S2 1'-0'	
		Sidewalk area	Slight spalling along bracing members		C S2 1'-0'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
	SIDEWALK					
4-5		Underside of east channel upper flange	1/16" -1/8" for ± 6'		C S3 4-5	
5-6		Underside and edge of west channel upper flange	1/16"-1/8" for full length		C S3 4-5	
6-7		Underside of both upper flanges of channel	1/16" - 1/8"		C S3 6-7	
7-8		Top surface of lower flanges of channels	1/16" - 1/8" full length		C S3 6-7	
8-9		Underside of upper flange and top surface of lower flange of west channel	1/16" - 1/8"		C S3 8-9	
9-10		Edge of east channel upper flange	1/16" - 1/8" for ± 20'		C S1 9-10	
10-11		Edge of top flange of east channel	1/16" layered rust		C S1 10-11	
11-12		Edge of top flange of east channel	1/8" pitting full		C S1 11-12	
12-13		Edge of top flange of west channel Top surface of lower flange	1/16" - 1/8" for ± 15' 1/16" - 1/8" for ± 4'.		C S1 12-13	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
14-15		Upper gusset at north end, top surface	1/8" pitting		C S1 14-15	C, S1,14-15, N, 1
		South end, east sidewalk channel web	1/8" loss		C S1 14-15	C, S1,14-15, SE,10
15-16		Rivets thru upper gusset at north end	8 rivets 25-50%		C S1 15-16	
16-15'		West channel top flange	1/16"-1/8" full length		C S1 15-16	
14'-13'		East channel upper flange	1/16"-1/8" full length		C S1 14'-13'	
11'-10'		West channel flanges	1/16"-1/8" for ± 5'		C S1 11'-10'	
10'-9'		Upper gusset at south end	Knife edge to 100% loss		C S1 10'-9'	
		All gussets and bracing	1/16"		C S1 10'-9'	
9'-8'		Bracing gussets at north end	1/16"-1/8" loss		C S1 9'-8'	
		North end of west channel lower flange	Knife edged for ± 6"		C S2 9'-8'	
		West channel bottom flange	1/16"-1/8" pitting for ± 1/2 span		C S2 9'-8'	
8'-7'		All bracing members	1/16"		C S2 8'-7'	
		Lower gusset rivets at north end	± 2 Rivets 75%		C S2 8'-7'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
6'-5'		Bracing gussets on west side	1/16"-1/8"		C S2 6'-5'	
		North end bottom gusset rivets	±2 Rivets 50%		C S2 6'-5'	
5'-4'		West chennel top and bottom flanges	1/16"-1/8" full length		C S2 5'-4'	
4'-3'		West channel top and bottom flanges	1/16"-1/8" full length		C S2 4'-3'	
		Lower gusset at north end top surface	1/16"-1/8"		C S2 4'-3'	
3'-2'		West channel top and bottom flanges	1/16"-1/8" full length		C S2 3'-2'	
		West channel lower flange at south end	± ½" pitting for ± 8"		C S2 3'-2'	
		Gussets and bracing at south end	1/16"-1/8"		C S2 3'-2'	
2'-1'		West channel flanges	1/16"-± 1/4" pitting full length		C S2 2'-1'	
1'-0'		Gussets at north end	1/16"-1/8" pitting		C S2 1'-0'	
		Bottom gusset at south end	Knife edged		C S2 1'-0'	

Span &/or Bay	Member	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
	WALKWAY					
9-10		Supporting plate at edge	1/8" loss		C S1 9-10	
		Grating sections	6 badly rusted		C S1 9-10	
11-12		Horizontal legs of supporting angles	100% loss in spots		C S1 11-12	C, S1,11-12, S, 1
		Grating sections	5 badly rusted		C S1 11-12	C, S1, 11-12, S, 5
12-13		Grating section	1 badly rusted		C S1 12-13	
		Horizontal support plates	1/16" to ragged edges		C S1 12-13	
14-15		Grating sections	± 9 badly rusted		C S1 14-15	
		Bracing rivets	1 Rivet 50%		C S1 14-15	
15'-14'		Grating sections	2 badly rusted		C S1 15'-14'	
12'-11'		Grating sections	± 9 badly rusted		C S1 12'-11'	
11'-10'		Grating sections	2 badly rusted		C S1 11'-10'	
9'-8'		Grating sections	± 8 badly rusted		C S2 9'-8'	C,S2,9'-8',N-Dwn,4
8'-7'		Grating sections	± 5 badly rusted		C S2 8'-7'	C,S2,8'-7',Dwn,1
7'-6'		Grating sections	2 badly rusted		C S2 7'-6'	
5'-4'		Grating sections	2 badly rusted		C S2 5'-4'	

D

TOP LATERAL BRACING

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
0-1	SW bottom gusset	Top surface	1/16"-1/8" pitting over ±50% of area	(1)	D S3 0-1	
	NE bottom gusset	Top surface	1/16"-1/8" pitting over ±50% of area		D S3 0-1	
1-2	NW top gusset	Rivets	2 Rivets 50% 1 Rivet 75%		D S3 1-2	
	NE bottom gusset	Top surface and edge	1/16"-1/8" with knife edge		D S3 1-2	
	SE bottom gusset	Rivets	3 Rivets 50%		D S3 1-2	
	Lateral at SE gusset	Edge of lower flange	Knife edge for ±12"		D S3 1-2	
	SW top gusset	Rivets Top surface	±12 Rivets 75-100% 1/16"-1/8" pitting over 50% area		D S3 1-2	
	SW bottom gusset	Top surface and edge	1/16"-1/8" with ragged edge		D S3 1-2	D,S3,1-2,SW,3
	Lateral at SW gusset	Inside surfaces of back-to-back legs	1/16"-1/8"		D S3 1-2	D,S3,1-2,SW,4
2-3	NW top gusset	Rivets	3 Rivets 50% 2 Rivets 75%	(2)	D S3 2-3	
	SW top gusset	Top surface Rivets	1/16" pitting 7 Rivets 75-100%		D S3 2-3	
	SW bottom gusset	Top surface and edge	1/16"-1/8" pitting with ragged edge		D S3 2-3	

Notes: (1) Corner of gusset lifted ±1/4" by layered rust.
(2) Corner of gusset lifter ±3/4" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
2-3	SE bottom gusset	Bottom edges	1/16"-1/8" to knife edges		D S3 2-3	
	NE bottom gusset	Top surface and	1/16"-1/8" to knife edge		D S3 2-3	
3-4	SW top gusset	Rivets	12 Rivets 75-100%		D S3 3-4	D,S3,3-4,SW,1
	SW bottom gusset	Rivets	2 Rivets 50%		D S3 3-4	
	Lateral at SE gusset	Lower flange edge	Knife-edged for ±13"		D S3 3-4	
	NE bottom gusset			(3)		
4-5	SW bottom gusset	Edge	Ragged edge for ±10"		D S3 3-4	D,S3,4-5,W,4
	NW top gusset	Top surface	1/16"-1/8" pitting over ±50% area		D S3 4-5	D,S3,4-5,NW,3
		Rivets	3 Rivets 50%		D S3 4-5	
	SE bottom gusset	Top surface and edge	1/16"-1/8" pitting to ragged edge		D S3 4-5	
		Rivets	3 Rivets 75%		D S3 4-5	
9-10	Strut at U10	Lower laces	±10 Laces 1/8" to ±50% loss		D S1 9-10	
		Top laces	±11 Laces 1/16"		D S1 9-10	
	Top gusset at U10W	Underside along edges of lateral bracing	1/16"		D S1 9-10	
11-12	Strut at U11	Top Laces Lower Laces	±15 Laces 1/16" loss 1 Lace knife-edged		D S1 11-12	

Note: (3) Lower corner bent down ±3/4" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
11-12	Strut at U11	Rivets thru lower flange on north side	17 Rivets 75-100%		D S1 11-12	
	Top gusset at U11W	North corner		(4)	D S1 11-12	
		Underside along edge of lateral	1/16"-1/8"		D S1 11-12	
	Lower gusset at U11E	Rivets	1 Rivet 100%		D S1 11-12	
	Strut at U12	East end lower flange rivets	3 Rivets 50% 1 Rivet 75%		D S1 11-12	
	Top gusset at U12E	Underside	1/16"-1/8" spots		D S1 11-12	
	Bracing U12E-U13W at U12E	Underside of lower flange along gusset edge	1/16"-1/8"		D S1 11-12	
	Lower gusset at U12W	North and south corners		(5)	D S1 11-12	
		Underside	1/32"-1/16" spots		D S1 11-12	
13-14	Upper gusset at U13W	Underside along edges of lateral	1/16"-1/8"			
	Bracing U12W-U13E at U13E and intersection	Underside lower flange	1/16"-1/8"		D S1 13-14	
	Upper gusset at U13E	Underside along edges of lateral	1/16"-1/8"		D S1 13-14	

Notes: (4) Corner bent upwards +3/8" by layered rust.
(5) North corner bent down +1/4"; south corner bent down +1/2" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
13-14	Upper gusset at U14W	Underside along bracing edges	1/16"-1/8"		D S1 13-14	
	Lower gusset at U14W	South corner and north corner		(6)	D S1 13-14	
	Upper gusset at U14E	Underside South corner	1/16"-1/8" spots	(7)	D S1 13-14	
	Bracing U14E-U15W at U14E	±25 Laces	1/16"-1/8" loss		D S1 13-14	
15-16	Upper gusset at U15W	Underside North and south corners	1/16"-1/8" spots	(8)	D S1 15-16	
	Lower gusset at U15W	North and south corners		(9)	D S1 15-16	
	Bracing U14E-U15W at U15W	Inside lower back-to-back vertical legs	1/16" loss		D S1 15-16	
		±50% Laces	1/16" loss		D S1 15-16	D,S1,14-15,NW,12 D,S1,14-15,W,21 D,S1,14-15,SE,22
	Upper gusset at U15E	Underside	1/16"-1/8" spots		D S1 15-16	
		Rivets	1 Rivet 75%		D S1 15-16	
	Bracing U15E-U16W	Top surface of lower flange	1/8" pitting		D S1 15-16	

Notes:
(6) South corner bent down +1/2"; north corner bent down ±3/8" by layered rust.
(7) South corner lifted +3/8" by layered rust.
(8) South corner lifted ±1/4"; north corner ±1/2" by layered rust.
(9) South corner bent down ±1/4"; north corner ±1/2" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
15-16	Bracing U15E-U16W	Inside surface of vertical legs of back-to-back angles	1/16" - 1/8" loss		D S1 15-16	D,S1,15-16,DWN-E,16
		±50% Laces	1/16" loss		D S1 15-16	
	Bracing U14W-U15E at U15E	Inside surface of vertical legs of upper back-to-back angles	1/16"-1/8" pitting		D S1 15-16	
	Bracing U15W-U16E	Underside of lower flange at U16E and intersection	1/16"-1/8" loss		D S1 15-16	
	Bracing U16E-U15'W at L16E	Underside of lower flange at gusset	1/16"-3/16" pitting		D S1 15-16	
		Inside surfaces of upper back-to-back vertical legs	±50% loss		D S1 15-16	
	Upper gusset at U16E	Underside	1/16"-1/8" loss		D S1 15-16	
		Rivets	1 Rivet 50%		D S1 15-16	
	Bracing U15E-U16W at U16W	Underside of lower flange at gusset	1/16"-1/8" loss		D S1 15-16	
	Bracing U16W-U15'E	Top surface of lower flange	1/32"-1/16" pitting full length		D S1 15-16	
	Upper gusset at U16W	Underside	1/16"-1/8" spots		D S1 15-16	

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
16-15'	Bracing U16E-U15'W	Underside of lower flange at U15'W and intersection	1/16"-1/8" loss		D S1 16-15'	
		±75% laces	1/16" loss		D S1 16-15'	
		Top surface of lower flange	1/16" pitting full length		D S1 16-15'	
	Lower gusset at U15'W	South corner		(10)	D S1 16-15'	
	Upper gusset at U15'W	Underside	1/16"-1/8" spots		D S1 16-15'	
		North corner		(11)	D S1 16-15'	
	Lower gusset at U15'W	Inside lower back-to-back angles of both bracing members	1/16"-1/8" loss		D S1 16-15'	
	Strut at U15'	±15% Laces	1/16" loss		D S1 16-15'	
	Upper gusset at U15'E	Underside	1/16"-1/8" spots		D S1 16-15'	
	Bracing U16W-U15'E at U15'E	Upper and lower back-to-back angles inside surfaces	1/16"-1/8" loss		D S1 16-15'	
	Bracing U15'W-U14'E	±50% Laces	1/16" spots		D S1 16-15'	
14'-13'	Upper gusset at U14'W	Underside	1/16"-1/8" spots		D S1 14'-13'	
	Upper gusset at U14'E	Underside	1/16"-1/8" spots		D S1 14'-13'	

Notes: (10) South corner bent down ±1/2" by layered rust.
(11) North corner bent up ±3/8" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
14'-13'	Bracing U14'E-U13'W at U14'E	Inside lower vertical legs of back-to-back angles	±30% thickness loss		D S1 14'-13'	D,S1,14'-13',E,11
13'-12'	Bracing U13'E-U12'W	Lower back-to-back angles	1/16" to ragged edge in spots		D S1 14'-13'	D,S1,14'-13',N,8
	Upper gusset at U13'E	Underside	1/16"-1/8" spots		D S1 14'-13'	
	Lower gusset at U13'E	South corner		(12)		
	Upper gusset at U13'E	Underside	1/16"-1/8" spots		D S1 14'-13'	
	Bracing U13'W-U12'E at U13'W and at U12'E	Underside of lower flange at gusset	1/16"-1/8"		D S1 14'-13'	
		Inside lower vertical back-to-back angles	1/8" loss		D S1 14'-13'	D,S1,14'-13',W,9
	Bracing U13'E-U12'W at intersection	Vertical legs of lower back-to-back angles	±50-100% loss		D S1 12'-11'	D,S1,13'-12',N,11
	Upper gusset at U12'W	Underside	1/16"-1/8" spots		D S1 12'-11'	
		North corner		(13)	D S1 12'-11'	D,S1,12'-11',W,16
	Lower gusset at U12'W	North corner	1/16"-1/8" spots	(14)	D S1 12'-11'	
	Upper gusset at U12'E	Underside	1/16"-1/8" spots		D S1 12'-11'	

Notes:
(12) South corner bent down ±1/2" by layered rust.
(13) North corner bent up ±3/8" by layered rust.
(14) North corner bent down ±3/8" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
12'-11'	Upper gusset at U11'W	Underside	1/16"-1/8" spots		D S1 12'-11'	
	Lower gusset at U11'W	Rivets	1 Rivet 50%		D S1 12'-11'	
	Strut at U11'	±5 Lower laces ±20 top laces	1/8" at edges 1/16" loss		D S1 12'-11' D S1 12'-11'	D,S1,12'-11',E,15
	Lower gusset at U11'E	North and south corners		(15)	D S1 12'-11'	
	Upper gusset at U11'E	Underside	1/16" spots		D S1 12'-11'	
10'-9'	Strut at U10'	±15 Top laces ±8 Lower laces	1/16" loss 1/8" to knife edges		D S1 10'-9' D S1 10'-9'	D,S1,11'-10',E,8
	Lower gusset at U10'E	North and south corners		(16)	D S1 10'-9'	
	Upper gusset at U10'E	Underside	1/16"-1/8" spots		D S1 10'-9'	
	Upper gusset at U10'W	Underside	1/16" spots		D S1 10'-9'	
	Bracing U10'E-U9'W at intersection	Inside lower back-to-back angles	1/8" loss		D S1 10'-9'	

Notes: (15) North corner bent down ±1/2" by layered rust; south corner bent ±3/8".
(16) North corner bent down ±1/2"; south corner ±3/8" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
5'-4'	NE to top gusset	Top surface	1/32"-1/4" pitting over ±75% of area		D S2 5'-4'	D,S2,5'-4',NE,4 D,S2,5'-4',NE,5
	NE lower gusset	Top surface	1/32"-1/8" pitting over ±75% of area		D S2 5'-4'	D,S2,5'-4',NE,6
	Lateral at NE gusset	Inside surfaces of back-to-back angles	1/32"-1/8" loss		D S2 5'-4'	
	NE lower gusset	Corner		(17)	D S2 5'-4'	
	SE top gusset	Rivets	±4 Rivets 25-50%		D S2 5'-4'	D,S2,5'-4',SE,8
	SW top gusset and bottom gusset	Top surface	1/16"-1/8" pitting over ±75% of area		D S2 5'-4'	
		Rivets	±26 Rivets 50-75%		D S2 5'-4'	
	NW bottom gusset	Top surface and edge	1/16"-1/8" to ragged edge		D S2 5'-4'	D,S2,5'-4',NW,3
		Rivets	±12 Rivets 50-75%		D S2 5'-4'	
4'-3'	NE bottom gusset	Top surface and edge	1/16" to knife edge		D S2 4'-3'	D,S2,4'-3',NE,1
		Rivets	5 Rivets 50% 1 Rivet 75%		D S2 4'-3'	D.S2,4'-3',N,2
	Lateral at NE gusset	Inside of both upper and lower back-to-back angles	1/32"-1/8"		D S2 4'-3'	
	SE bottom and top gussets	Top surface	1/32"-1/4" pitting over ±50% of areas		D S2 4'-3'	
	SE bottom gusset	North corner		(18)	D S2 4'-3'	

Notes: (17) Corner bent down ±1/2" by layered rust.
(18) Corner bent down ±1-1/4" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
4'-3'	NW top gusset	Top surface	1/16"-1/8" over ±50% of area		D S2 4'-3'	
	NW bottom gusset	Top surface	1/16"-1/8" over ±25% of area		D S2 4'-3'	
		South corner		(19)	D S2 4'-3'	
	NW top gusset	Rivets	2 Rivets 50%		D S2 4'-3'	
	Lateral at SW gusset	Inside of lower back-to-back angles	1/16"-1/8" loss		D S2 4'-3'	
3'-2'	NW top gusset	Top surface	1/16"-1/8" pitting over ±75% of area		D S2 3'-2'	
		Rivets	4 Rivets 50-75%		D S2 3'-2'	
		South corner		(20)	D S2 3'-2'	
	Lateral at NW gusset	Inside lower back-to-back angles	1/16"-1/8"		D S2 3'-2'	D,S2,3'-2',NW,5
	NE top and bottom gussets	Top surfaces	1/32"-1/8" pitting over ±75% of area		D S2 3'-2'	D,S2,3'-2',NE,2
	NE top gusset	Rivets	4 Rivets 50%		D S2 3'-2'	
	NE bottom gusset	Rivets	7 Rivets 50%		D S2 3'-2'	D,S2,3'-2',NE,1
	Lateral at NE gusset	Inside both upper and lower back-to-back angles	1/16"-1/8"		D S2 3'-2'	
	SE top gusset	Rivets	3 Rivets 50%		D S2 3'-2'	

Notes: (19) Corner bent down ±7/8" by layered rust.
(20) Corner bent up ±1" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
2'-1'	NE bottom gusset	West edge	Ragged and knifed-edge		D S2 2'-1'	D,S2,2'-1',NE,2
		Rivets	±3 Rivets 50-75%		D S2 2'-1'	D,S2,2'-1',N,1
	Lateral at NE gusset and at SE gusset	Inside both upper and lower back-to-back angles	1/32"-1/8"		D S2 2'-1'	
	Lateral at SE gusset	Top surface of top flanges	1/16"-1/8" pitting		D S2 2'-1'	
	SW top gusset	Top surface	1/16"-1/8" pitting over ±75%		D S2 2'-1'	
	SW bottom gusset	Top surface	1/16"-1/8" pitting over ±25%		D S2 2'-1'	
1'-0'	Lateral at NW gusset	Inside lower back-to-back angles	1/16"-1/8"		D S2 1'-0'	
	SE bottom gusset	Top surface	1/16"-1/8" pitting over ±50% of area		D S2 1'-0'	
	NE top and bottom gussets	Top surfaces	1/16"-1/4" pitting over ±75% of area		D S2 1'-0'	
	NE top gusset	South corner		(21)	D S2 1'-0'	
	Lateral at NE gusset	Inside both upper and lower back-to-back angles	1/16"-1/8"		D S2 1'-0'	

Note: (21) Corner bent up ±1/2" by layered rust.

E

BOTTOM LATERAL BRACING

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
0-1	Strut at L0	±50% Laces	1/8"-1/4" loss		E S3 0-1	E,S3,0-1,W,3
		±50% Laces	±50% thickness loss		E S3 0-1	E,S3,0-1,W,4
		Rivets	4 Rivets 50% 6 Rivets 75%		E S3 0-1	
	Strut at L1	±5% Top laces	1/8" loss		E S3 0-1	E,S3,0-1,E,5
		±10% Bottom laces	1/8" loss			
		2 Laces	±75% loss		E S3 0-1	
		Rivets	1 Rivet 50%		E S3 0-1	
2-3	Bottom gusset at L2E	Rivets	2 Rivets 50%		E S3 2-3	
	Top gusset at L3W	Rivets	2 Rivets 50%		E S3 2-3	E,S3,2-3,W,2
	Strut at L3	±20% Laces	1/16"-1/8"		E S3 2-3	E,S3,2-3,E,3
4-5	Strut at L4	±20% Laces	1/16"-1/8"		E S3 4-5	E,S3,4-5,W,6
	Top gusset at L4E	Rivets	6 Rivets 50-75%		E S3 4-5	
	Bottom gusset at L4W	East edge	1/16"-1/8" for ±6"		E S3 4-5	
	Top gusset at L4E	West edge	1/16"-1/8" to ragged for ±8"		E S3 4-5	
		South corner		(1)	E S3 4-5	
	Bracing L4E-L5W at L4E	±10 Laces	1/16"-1/8" loss		E S3 4-5	
	Strut at L5	±70 Laces	1/16"-1/8" loss, replace 4		E S3 4-5	
		Rivets	2 Rivets 50%		E S3 4-5	

Note: (1) Corner lifted ±5/8" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
4-5	Top gusset at L5E	Rivets	3 Rivets 50%		E S3 4-5	
	Top gusset at L5W	Top surface	1/16"-1/8" pitting over ±50% of area		E S3 4-5	E,S3,5-6,SW,1
		Rivets	12 Rivets 50-75%		E S3 4-5	
	Bracing L5E-L6W at L5E	±14 Laces	1/16"-1/8", replace ±4		E S3 4-5	
6-7	Top gusset at L6W	Top surface	1/16"-1/8" pitting over ±25% of area		E S3 6-7	E,S3,6-7,W,1
		Rivets	+9 Rivets 50-75% ±7 addl.		E S3 6-7	
	Bottom gusset at L6W	Top surface	1/16"-1/8" pitting over ±50% of area		E S3 6-7	
	Bracing L6E-L7W at L6E	±6 Laces	1/16"-1/8", replace 2		E S3 6-7	
	Bracing L6W-L7E	±12 Laces	1/16"-1/8"		E S3 6-7	
	Strut at L6	±10 Laces	Replace because of metal loss		E S3 6-7	
	Strut at L7	±80% Laces	1/16"-1/8"		E S3 6-7	E,S3,7-8,NE,3
	Top gusset at L7W	Top surface	1/16"-1/8" over ±50% of area		E S3 6-7	
		Rivets	9 Rivets 75-100%		E S3 6-7	
	Top gusset at L7E	Top surface	1/16"-1/8" pitting over ±50% of area		E S3 6-7	
		Rivets	5 Rivets 50%		E S3 6-7	

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
6-7	Bracing L6W-L7E	Top surface of top flange	1/16"-1/8" pitting		E S3 6-7	
8-9	Strut at L8	±20 Laces	30-50% loss to ragged		E S3 8-9	E,S3,8-9,DWN,6
	Top gusset at L8E	Top surface	1/16"-1/8" pitting over ±75% of area		E S3 8-9	
	Bottom gusset at L8E	West edge Top surface	1/16"-1/8" for ±10" 1/16"-1/8" pitting over ±75% of area		E S3 8-9 E S3 8-9	
	Top gusset at L8W	East edge	1/16"-1/8" to ragged for ±12"		E S3 8-9	
		Rivets	±8 Rivets 50-75%		E S3 8-9	
	Bracing L7W-L8E	±6 Laces	1/16"-1/8"		E S3 8-9	
	Bracing L8W-L9E	±14 Laces	1/16"-1/8"		E S3 8-9	
	Strut at L9	±20 Laces	1/16"-1/8" to ragged and knife-edged		E S3 8-9	E,S3,8-9,DWN-E,7
	Top gusset at L9W	Top surface	1/16"-1/8" over ±50% of area		E S3 8-9	E,S3,8-9,W,10
	Bottom gusset at L9E	Edge	±1/8" to ragged for ±8"		E S3 8-9	
	Top gusset at L9E	Rivets	±10 Rivets 50%		E S3 8-9	
	Lower strut at L9	Inside channel surfaces ±75% laces	1/16"-1/8" under blisters 1/16" loss		E S3 8-9 E S3 8-9	E,S3,8-9,N,9 E,S3,8-9,E,8

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
8-9	Top gusset at east end of lower strut	Top surface	1/16"-1/8" pitting		E S3 8-9	
9-10	Strut at L9	±60% Top laces ±80% Bottom laces	1/16"-1/8" 1/16"-1/8"		E S3 8-9 E S3 8-9	
	Bracing L9W-L10E at L9W	±4 Laces	1/16"-1/8" loss		E S1 9-10	
	Bracing L9E-L10W at L9E	±4 Laces	1/16"-1/8" loss		E S1 9-10	
	Bottom gusset at L9E	Rivets	4 Rivets 50%		E S1 9-10	
	Bracing L9W-L10E at L10E	±28 Laces	1/16"-1/8" loss, replace 2 laces		E S1 9-10	
	Bracing L9E-L10W at L10W	±30 Laces	1/16"-1/8" loss		E S1 9-10	
	Strut at L10	±60 Laces	Replace		E S1 9-10	
11-12	Strut at L12	±23 Laces Lacing rivets	1/16" loss ±11 Rivets 50% ±9 Rivets 75%		E S1 11-12 E S1 11-12	
	Top gusset at L12W	Rivets	1 Rivet 50%		E S1 11-12	
	Bracing L11E-L12W at L12W	Inside lower back-to-back angles	1/16" loss		E S1 11-12	
13-14	Strut at L13	±13 Laces Lacing rivets	1/16" loss 2 Rivets 50%		E S1 13-14 E S1 13-14	

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
13-14	Top gusset at L13E	Underside around edge of lateral	1/8" loss		E S1 13-14	
	Bracing L13E-L14W at L13E	Lower vertical legs	75-100% loss in thickness		E S1 13-14	
	Top gusset at L14W	Underside	1/16"-1/8" spots		E S1 13-14	
		Rivets	2 Rivets 50%		E S1 13-14	
	Bracing L13E-L14W at intersection	Inside back-to-back angles	1/16"-1/8" loss		E S1 13-14	
	Top gusset at L14E	Underside	1/16"-1/8" spots		E S1 13-14	
		South corner		(2)	E S1 13-14	
	Bracing L13W-L14E	Inside lower back-to-back angles	+30% thickness loss		E S1 13-14	
15-16	Top gusset at L15E	Underside	1/16"-1/8" spots		E S1 15-16	
	Bottom gusset at L15E	Top surface	1/16"-1/8" spots		E S1 15-16	
		South corner		(3)	E S1 15-16	
	Top gusset at L15W	Underside	1/16" spots		E S1 15-16	
	Bracing L15W-L16E	Underside of lower flange at gusset	1/16" pitting		E S1 15-16	
		Top surface of upper flange at intersection	1/8"-3/16" loss		E S1 15-16	E,S1,15-16,SE,15
	Top gusset at L16W	North corner	±50% loss at edge	(4)	E S1 15-16	E,S1,15-16,SW,13
		Underside	1/16"-3/16" spots		E S1 15-16	

Notes:
(2) Corner lifted ±3/8" by layered rust.
(3) Corner bent down ±1/2" by layered rust.
(4) Corner bent up ±1/2" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
15-16	Bottom gusset at L16W	Top surface	1/16" spots		E S1 15-16	
	Top gusset at L16E	Underside	1/8"- 3/16"		E S1 15-16	
		Top surface	1/16"-1/8"		E S1 15-16	E,S1,15-16,E,14
		Rivets	4 Rivets 50%		E S1 15-16	
	Bottom gusset at L16E	Top surface	1/16"-1/8" pitting		E S1 15-16	
		South corner		(5)	E S1 15-16	
	Catwalk at L16E	Nuts for connection angle bolts	2 - 50%		E S1 15-16	
			2 - 75%		E S1 15-16	
16-15'	Strut at L15'	±50% Laces	1/16"		E S1 16-15'	
	Top gusset at L15'W	Underside	1/16"-1/8" spots		E S1 16-15'	
		North corner		(6)	E S1 16-15'	
	Bracing at intersection	Underside of lower flanges	1/16"-1/8" spots		E S1 16-15'	
	Top gusset at L15'E	Underside	1/16"-1/8" spots		E S1 16-15'	
	Catwalk at L15'E	Nuts for connection angle bolts	3 of 4 nuts 100%		E S1 16-15'	
	Bracing at L15'E	Inside both upper and lower back-to-back angles	1/16"-1/8"		E S1 16-15'	
	Bottom gusset at L15'E	Underside	1/16" spots		E S1 16-15'	
		North corner		(7)	E S1 16-15'	

Notes: (5) Corner bent down ±3/8" by layered rust.
(6) Corner bent up ±3/8" by layered rust.
(7) Corner bent down ±3/8" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
16-15'	Strut at L14'	±15% Laces	1/16" spots		E S1 16-15'	
14'-13'	Strut at L14'	Lacing rivets	3 Rivets 50% 3 Rivets 75-100%		E S1 14'-13'	
	Top gusset at L14'W	Underside	1/16"-1/8" spots		E S1 14'-13'	E,S1,14'-13',W,7
	Bracing L14'W-L13'E at L14'W	Top surface of upper flange and underside of lower flange	1/16" pitting		E S1 14'-13'	
	Top gusset at L14'E	Underside at catwalk connection	1/8"-3/16"		E S1 14'-13'	
	Catwalk	Nuts for connection angle bolts	2 - 50% 2 - 75%		E S1 14'-13'	
	Bracing L14'E-L13'W at L14'E	Inside both back-to-back angles	1/16"-1/8"		E S1 14'-13'	
	Top gusset at L13'E	Underside	1/16"-1/8" spots		E S1 14'-13'	
	Catwalk	Nuts for connection angle bolts	1 - 50% 1 - 75%		E S1 14'-13'	
	Strut at L13'	±75% Laces Lacing rivets	1/16" spots 3 Rivets 50% 2 Rivets 75%		E S1 14'-13' E S1 14'-13'	
	Top gusset at L13'W	Underside	1/16"-1/8" spots		E S1 14'-13'	

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
14'-13'	Bracing L14'E-L13'W at intersection and at L14'E	Inside lower back-to-back angles	1/16"		E S1 14'-13'	E,S1,14'-13',W,12
		Underside of lower flange	1/16"-1/8" spots		E S1 14'-13'	
12'-11'	Strut at L12'	Rivets on south lower flange	±20 Rivets 50% ±11 Rivets 75%		E S1 12'-11'	
10'-9'	Strut at L10'	±18 upper laces ±20 lower laces	1/16"-1/8" 1/16"-1/8"		E S1 10'-9'	
	Top gusset at L10'E	Rivets	±7 Rivets 50-75%		E S1 10'-9'	
9'-8'	Bottom gusset at L9'E	Top surface along edges of strut	1/16"		E S2 9'-8'	
	Strut at L9'	Top surface of top flange at laces	1/16"-1/8" spots		E S2 9'-8"	
		±60% lower laces Top lacing rivets	1/16"-1/8" spots ±8 Rivets 50%		E S2 9'-8' E S2 9'-8'	E,S2,9'-8',W,7
	Top gusset at intersection of bracings	Top surface	1/16" spots		E S2 9'-8'	
	Top gusset at L8'W	Rivets	±9 Rivets 50-75%		E S2 9'-8'	
	Bottom gusset at L8'W	East edge Top surface	Ragged 1/16"-1/8" over ±50% of area		E S2 9'-8' E S2 9'-8'	E,S2,9'-8',W,5
	Strut at L8'	±30% bottom laces ±25% top laces	1/16"-1/8" 1/16"-1/8"		E S2 9'-8' E S2 9'-8'	

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
9'-8'	Bottom gusset at L8'E	West edge South corner	Knifed and ragged	(8)	E S2 9'-8'	E,S2,9'-8',E,6
	Top gusset at L8'E	South corner		(9)	E S2 9'-8'	
	Top plate at intersection of bracing	Underside	1/16" spots		E S2 9'-8'	
	Lower strut at L9'	Inside faces of channels	1/32"-1/8" spots under blisters		E S2 9'-8'	E,S2,9'-8',SW,8
7'-6'	Strut at L7'	±70% Laces	1/16"-1/8"		E S2 7'-6'	E,S2,7'-6',W,3
	Top gusset at L6'W	East edge	Ragged edge for ±10"		E S2 7'-6'	E,S2,7'-6',W,1
	Bottom gusset at L6'W	Top surface	1/16"-1/8" pitting over ±50% of area		E S2 7'-6'	
		East edge	Knife-edged to ragged		E S2 7'-6'	
	Top and bottom gussets at L6'E	East edges	Knife-edged to ragged		E S2 7'-6'	E,S2,7'-6',E,2
	Bottom gusset at L6'E	Top surface	1/16"-1/8" over ±75% of area		E S2 7'-6'	
5'-4'	Strut at L5'	Inside edges of channels	1/16"-1/8" full length		E S2 5'-4'	
		±10% Laces	30-50% thickness loss		E S2 5'-4'	
		All laces	1/16"-1/8" spots		E S2 5'-4'	E,S2,5'-4',E,2
	Bottom and top gussets at L5'W	All surfaces	1/16"-1/9" pitting spots		E S2 5'-4'	E,S2,5'-4',W,10

Notes: (8) Corner bent down ±1/2" by layered rust.
(9) Corner bent up ±1/2" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
5'-4'	Bracing L6'E-L5'W at L5'W	Top surface of both top and bottom flanges	1/16"-1/8" pitting		E S2 5'-4'	
		Gusset plate at intersection	1/16"-1/8" spots		E S2 5'-4'	
	Bracing L5'W-L4'E at L5'W	Top surface of both top and bottom flanges	1/16"-1/8" pitting		E S2 5'-4'	
	Both top and bottom gussets at L5'E	All surfaces	1/16"-1/8" pitting		E S2 5'-4'	
	Bracing L6'W-L5'E at L5'E	Inside upper back-to-back angles	1/8"		E S2 5'-4'	
		Underside of lower flange	1/16"-1/8"		E S2 5'-4'	
	Both top and bottom gussets at L4'E	All surfaces	1/16"-1/8" pitting		E S2 5'-4'	
	Bracing L4'E-L3'W at L4'E	Top surface of upper flange at gusset edge	1/8" pitting		E S2 5'-4'	
		Inside upper back-to-back angles	1/16"-1/8"		E S2 5'-4'	
	Bracing L5'W-L4'E	Inside both upper and lower back-to-back angles	1/16"		E S2 5'-4'	
	Bottom gusset at L4'E	South corner		(10)		

Note: (10) Corner bent down ±3/8" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
5'-4'	Top gusset at L4'W	Underside	1/16"-1/4" pitting	(11)	E S2 5'-4'	
	Bottom gusset at L4'W	Top surface	1/8" pitting spots		E S2 5'-4'	
	Bracing L5'E-L4'W at L4'W	Underside of lower flange and top surface of upper flange along gusset edge	1/16"-1/8" pitting		E S2 5'-4'	
3'-2'	Strut at L3'	1st lace from west Top surface of upper flange at laces and edge of channel ±30% laces	Almost broken 1/16"-1/8" 1/16"-1/8" spots		E S2 3'-2' S S2 3'-2' E S2 3'-2'	
	Top gusset at L3'W	South corner and North corner		(12) (12)	E S2 3'-2'	
	Bottom gusset at L3'W	Top surface North and south corners	1/16"-1/8" spots	 (13)	E S2 3'-2' E S2 3'-2'	
	Bracing L3'W-L2'E	Inside upper back-to-back angles	1/8"		E S2 3'-2'	
	Bracing L4'E-L3'W	Inside upper back-to-back angles	1/8"-3/16"		E S2 3'-2'	
	Both top and bottom gussets at L3'E	All surfaces	1/16"-1/4" pitting		E S2 3'-2'	

Notes: (11) There is layered rust between the top gusset and the top flanges of the strut.
(12) South corner bent up ±1/2"; north corner bent up ±3/8".
(13) Corners bent down ±3/8" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
3'-2'	Top gusset at L3'E	North and south corners		(14)	E S2 3'-2'	
	Bracing L4'W-L3'E at L3'E	Inside upper back-to-back angles	1/8"		E S2 3'-2'	
	Bracing L4'W-L3'W at intersection	Underside of lower flange	1/16"-1/8" spots		E S2 3'-2'	
	Bracing L3'E-L2'W at L3'E	Inside upper back-to-back angles	1/16"-1/8"		E S2 3'-2'	
	Gusset at bracing intersection	Top surface	1/16"-1/8"		E S2 3'-2'	
	Strut at L2'	±50% laces All channel faces	1/16"-1/8" spots 1/16"-1/8" spots under blisters full length		E S2 3'-2' E S2 3'-2'	E,S2,3'-2',NE,7
	Top gusset at L2'E	Underside	1/16"-3/16" pitting		E S2 3'-2'	
	Bracing L2'E-L1'W	Inside of upper back-to-back angles	1/16"-1/8"		E S2 3'-2'	
	Strut at L2'	1st lace from west	Almost broken		E S2 3'-2'	
	Top gusset at L2'W	Underside	1/16"-±30% thickness loss at edge		E S2 3'-2'	
	Bottom gusset at L2'W	North corner		(15)	E S2 3'-2'	

Notes: (14) Corners lifted ±1/2" by layered rust.
(15) Corner bent down ±3/8" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
1'-0'	Strut at L1'	±30% lower laces	±25% thickness loss		E S2 1'-0'	E,S2,1'-0',E,3
	Top gusset at L1'E	South corner		(16)	E S2 1'-0'	
	Bottom gusset at L1'E	North corner		(17)	E S2 1'-0'	
	Bracing L1'E-L0'W at L1'E	Inside upper back-to-back angles	1/16"-1/8"		E S2 1'-0'	
	Strut at L1'	Top surface of upper flange and underside of bottom flange at laces	1/16"-1/8"		E S2 1'-0'	E,S2,1'-0',W,4
		Lower inside edge of channels	1/16"-1/8"		E S2 1'-0'	
	Bottom gusset at L1'W	North corner		(18)	E S2 1'-0'	
	Strut at L0'	Top surface of top and bottom flanges	1/32"-1/8" pitting		E S2 1'-0'	
	Top and bottom gussets at L0'W	Top surfaces	1/16"-1/8" pitting		E S2 1'-0'	
	Bracing L1'E-L0'W	Inside upper back-to-back angles	1/16"-1/8"		E S2 1'-0'	
	Bracing L1'W-L0'E at L0'E	Top surface of top flange	1/32"-1/8" pitting		E S2 1'-0'	

Notes:
(16) Corner bent up ±1/2" by layered rust.
(17) Corner bent down ±3/8" by layered rust.
(18) Corner bent down ±1/2" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
1'-0'	Top gusset at L0'E	Top surface South corner	1/16"-1/8" pitting over ±50% of area	(19)	E S2 1'-0'	
	Drain pipe connection at bracing L1'W-L0'E	Bolts thru flange	Loose		E S2 1'-0'	

Note: (19) Corner lifted ±3/8" by layered rust.

F

SWAY BRACING

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
0-1	Lower west bracing	± 3 laces	±50% thickness loss		F S3 0-1	F,S3,0-1,W,6
		Inside back to back angles	1/8"		F S3 0-1	
	Lower east bracing	± 14 laces	±50% thickness loss		F S3 0-1	
		Lacing rivets	± 8 Rivets 50%		F S3 0-1	
	Upper west bracing	± 38 laces	1/16"-1/8" pitting		F S3 0-1	
		± 12 laces	1/8" to 100%		F S3 0-1	
	Lower west gusset	Rivets	5 Rivets 50% 6 Rivets 75%		F S3 0-1	
	Lower east gusset	Rivets	± 10 Rivets 75%		F S3 0-1	
	Middle gussets	Corners		(1)	F S3 0-1	
4-5	Lower west bracing	± 40% laces	1/16"- 1/8"		F S3 4-5	
	Lower east bracing	± 8 laces	1/16"-1/8"		F S3 4-5	
	Upper west bracing	± 50% laces	1/16"-1/8", replace 2			
	Upper east bracing	± 4 laces	Replace		F S3 4-5	
		Lacing rivets	6 Rivets 50-75%		F S3 4-5	
	Middle gussets	Top corners		(2)	F S3 4-5	
		Bottom corners	1/16"-1/8"		F S3 4-5	
	Lower east bracing	Top surface of batten plate	1/16"-1/8" over ±25% area		F S3 4-5	
5-6	Lower west bracing	All laces	1/16"		F S3 5-6	F,S3,5-6,N,2
		Top surface of batten plate	1/16"-1/8" over ±50% area		F S3 5-6	
	Lower west gusset	Surfaces	1/16"-1/8" over ±25% area		F S3 5-6	
		Rivets	3 Rivets 75%			
	Upper east bracing	± 20 laces	1/16"-1/8" pitting		F S3 5-6	
		± 10 laces	Replace			
	Upper west bracing	± 6 laces	Replace		F S3 5-6	
		Edge of batten plate	1/16"-1/8" to knife edge		F S3 5-6	
	Middle gusset plates	Lower corners		(3)	F S3 5-6	F,S3,5-6,UP,7

Note (1) Corners bent out ± 1" by layered rust (3) Corners lifted out ± 1" by layered rust
(2) Corners bent out ± 1" by layered rust

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
6-7	Lower east bracing	±24 Laces ±6 Laces	1/16"-1/8" Replace		F S3 6-7 F S3 6-7	
	Lower east gusset	All surfaces	1/16" pitting		F S3 6-7	
	Upper west bracing	±4 Laces	Replace		F S3 6-7	
	Upper west gusset	South side of south plate	1/16"-1/8" to knifed and ragged edge		F S3 6-7	
	Upper east bracing	±4 Laces	Replace		F S3 6-7	
	Middle gusset plates	All corners	1/16"-1/8"		F S3 6-7	
	Lower east gusset	Rivets	1 Rivet 50%		F S3 6-7	
7-8	Lower east bracing	±14 Laces ±4 Laces	1/16"-1/8" Replace		F S3 7-8 F S3 7-8	
	Upper west bracing	±10 Laces	Replace		F S3 7-8	
	Middle gusset plates	All corners Inside faces	 1/16"-1/8" spots	(4)	F S3 7-8 F S3 7-8	F,S3,7-8,N,4
	Upper east bracing	Top surface of batten plate	1/16"-1/8" over ±50% of area		F S3 7-8	
8-9	Lower west bracing	±20 Laces ±8 Laces Bottom surface of batten plate	1/16"-1/8" Replace 1/16"-1/8"		F S3 8-9 F S3 8-9 F S3 8-9	
	Lower west gusset	Rivets Inside surfaces	2 Rivets 50% 1/16"-1/8"		F S3 8-9 F S3 8-9	

Note: (4) Corners lifted ±1/2" to ±1" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
8-9	Lower east gusset	Inside surfaces	1/16"-1/8" over ±25% of area		F S3 8-9	
	Lower east bracing	±20 Laces	1/16"-1/8"		F S3 8-9	
		±8 Laces	Replace		F S3 8-9	
		Lacing Rivets	±4 Rivets 50%		F S3 8-9	
	Upper east bracing	±12 Laces	1/16"-1/8"		F S3 8-9	
		±8 Laces	Replace		F S3 8-9	
	Upper west bracing	±14 Laces	1/16"-1/8"		F S3 8-9	
		±8 Laces	Replace		F S3 8-9	
		Top surface of batten plate	1/16"-1/8" pitting		F S3 8-9	
	Upper west gusset	North inside and outside face	1/16"-1/8" pitting with ragged lower edge		F S3 8-9	
9-10	Lower truss @pp 10	Top surface of all stay plates	1/8"-3/16" pitting with ragged edges		F S1 9-10	F,S1,9-10,S,1 F S1,9-10,S,2
10'-9'	Lower truss @pp 10'	All stay plates	1/8"-±1/4" pitting		F S1 10'-9'	F,S1,10'-9',W,7
		Rivets	3 Rivets 50%		F S1 10'-9'	
			4 Rivets 75%		F S1 10'-9'	
9'-8'	Upper west bracing	±50% Laces	1/16"-1/8"		F S2 9'-8'	
	Upper west gusset	North plate outside surface	1/16"-1/8" over ±75% of area		F S2 9'-8'	
		Rivets	±14 Rivets 75%		F S2 9'-8'	
	Middle gusset plates	All corners		(5)	F S2 9'-8'	F,S2,9'-8',DWN-S,9
		Lower edge	1/16"-1/8" for ±10"		F S2 9'-8'	

Note: (5) Corners bent out ±1/2" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
7'-6'	Lower west bracing	±30% Laces	1/16"-1/8"		F S2 7'-6'	
	Lower west gussets	South outside face	1/16"-1/8" over ±50%		F S2 7'-6'	
	Upper west bracing	±20% Laces ±5 Laces	1/16"-1/8" Knife edge and ragged		F S2 7'-6' F S2 7'-6'	
	Middle gusset plates	All corners		(6)		
6'-5'	Lower west gusset	South outside face area	1/16"-1/8" over ±25%		F S2 6'-5'	
	Upper east bracing	±40% Laces	1/16"-1/8"		F S2 6'-5'	
	Upper west bracing	Lacing rivets Top surface of batten plate	3 Rivets 50% 1/16"-1/8" over ±75% of area		F S2 6'-5' F S2 6'-5'	
	Upper west gussets	South outside face	1/16"-1/8" over ±50% of area		F S2 6'-5'	
	Middle gusset plates	All corners	1/16"-1/8" for ±6"	(7)	F S2 6'-5'	
5'-4'	Lower west bracing	±30% Laces	1/16"-1/8"		F S2 5'-4'	
	Upper east bracing	±30% Laces	1/8" pitting, 1 ragged lacing		F S2 5'-4'	F,S2,6'-5', E,1
	Upper west bracing	±10% Laces	1/8" pitting		F S2 5'-4'	

Notes: (6) Corners bent out ±1/2" by layered rust.
(7) Corners bent out ±1/2" to ±3/4" by layered rust.

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
5'-4'	Middle gussets	All corners		(8)	F S2 5'-4'	F,S2,5'-4',S,11
		Inside faces of gussets	1/8"-3/16" pitting		F S2 5'-4'	F,S2,5'-4',NE,12
		Lower southwest corner	Ragged for ±4", ±1/2" wide		F S2 5'-4'	
1'-0'	Lower west bracing	±13 Laces	1/8"-3/16" pitting		F S2 1'-0'	
	Lower west gusset	Edge of north plate	±50% thickness loss		F S2 1'-0'	F,S2,1'-0',SW,12
	Lower east bracing	±10 Laces	1/16"-1/8" pitting		F S2 1'-0'	
		Inside back-to-back angles	Layered rust		F S2 1'-0'	
	Upper east bracing	±50% Laces	±30%-±50% loss		F S2 1'-0'	F,S2,1'-0', E,11
	Upper west bracing	±10% Laces	1/8"-3/16" pitting		F S2 1'-0'	
		±2 Laces	Knife edged with 100% loss		F S2 1'-0'	F,S2, 1'-0',W,13
	Upper west gusset	North plate	±3/16"-±1/4" pitting		F S2 1'-0'	F,S2,1'-0',SE,8
	Middle gusset plates	All corners		(9)	F S2 1'-0'	

Notes: (8) Corners bent out ±1/2" to ±1" by layered rust.

(9) Corners bent ±1/2" to ±1" by layered rust.

G

WIND CHORDS

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
15'-14'	Bottom gusset at L14'W	Top surface	1/16"-1/8" over ±50% of area		G S1 15'-14'2	
		Bracing rivets	3 Rivets 25-50%		G S1 15'-14'2	
14'-13'	Bracing L14'W-L13'E	Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 14'-13'2	
		±12 Laces	Replace		G S1 14'-13'2	G,S1,14'-13',NW,10
		Top surface of top flange	1/16" pitting for ±6'		G S1 14'-13'2	
	Bracing L14'E L13'W	Top surface of lower flange under catwalk	1/16"-1/8" pitting		S S1 15'-14'2	
		Top surface of top flange	1/16"-1/8" pitting full length		G S1 15'-14'2	
		±28 Laces	1/16"-1/8"		G S1 15'-14'2	
		±4 Laces	100% loss		G S1 15'-14'2	
	Top gusset at L13'W	Top surface	1/16"-1/8" pitting over ±50% of area		G S1 14'-13'2	
		Rivets	±7 Rivets 25-50%			
	Bottom gusset at L13'W	Top surface	1/16"-1/8" pitting over ±50% of area		G S1 14'-13'2	
	Bracing L14'E-L13'W	Inside lower back-to-back angles	1/16"-1/8"		G S1 14'-13'2	
	Bottom gusset at L13'E	Top surface	1/16"-1/8" over ±75% of area		G S1 14'-13'2	
13'-12'	Bracing L13'W-	Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 13'-12'2	
		±24 Laces	1/16"-1/8"		G S1 13'-12'2	
		±4 Laces	100% loss			
		Top flange edge at L12'E	Ragged edge for ±12"		G S1 13'-12'2	

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
13'-12'	Bracing L13'E-L12'W	Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 14'-13'2	G,S1,13'-12',DWN,4
		Top surface of top flange	1/16"-1/8" pitting for ±5'		G S1 14'-13'2	
		±26 Laces	Replace		G S1 12'-13'2	
12'-11'	Bracing L12'W-L11'E	±10 Laces	1/16"-1/8"		G S1 12'-11'2	
	Bracing L12'E-L11'W	Top surface of lower flange under catwalk	1/16"-1/8" to ragged		G S1 12'-11'2	G,S1,12'-11',DWN,12 G,S1,12'-11',N,13 G,S1,12'-11',DWN,14
	Bracing L12'E-L11'W	±26 Laces	1/16"-1/8" pitting		G S1 12'-11'2	
	West wind chord	±28 Laces	1/16"-1/8"		G S1 12'-11'2	
	East wind chord	±32 Laces	1/16"-1/8"		G S1 12'-11'2	
	Bottom gusset at L12'W	Top surface	1/16"-1/8" pitting over ±75% of area		G S1 12'-11'2	
		Rivets	±8 rivets 75%		G S1 12'-11'2	
	Top gusset at L11'E	Top surface	1/16"-1/8" over ±50% of area		G S1 12'-11'2	
11'-10'	Strut at L10'	±12 Top laces	Knifed to 100% loss		G S1 11'-10'	G;S1,11'-10',W,11
		±12 Bottom laces	Knifed to 100% loss		G S1 11'-10'	
		Rivets	±20% rivets 25-50%		G S1 11'-10'	
	East wind chord	North inside face rivets	±10 Rivets 50-75%		G S1 11'-10'	G,S1,10'-9',E,10

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
11'-10'	Bottom gusset at L10'W	Rivets	4 Rivets 50%		G S1 11'-10'	G,S1,11'-10',NW,13
	Bracing L11'W-L10'E	Top surface of upper and lower flanges	1/16"-1/8" pitting		G S1 11'-10'	G,S1,11'-10',NE,12
		±2 Laces	Replace		G S1 11'-10'	
	Bracing L11'E-L10'W	Top surface of upper flange	1/16"-1/8" pitting		G S1 11'-10'	
	Each wind chord	North lower stay plate top surface	1/16"-1/8" pitting over ±75% of area		G S1 11'-10' G S1 11'-10'	
	West wind chord	North end shim plate	Loose		G S1 11'-10'	G,S1,10'-9',S,8

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
10-11	Strut at L10	±20 Laces	1/16"-1/8" pitting		G S1 10-11	
		±14 Laces	Replace			
	East wind chord	±16 Laces	1/16"-1/8"		G S1 10-11	
	West wind chord	±14 Laces	1/16"-1/8"		G S1 10 11	
	Bracing L10E-L11W	Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 10-11	
	Bracing L10W-L11E	Top surfaces of upper and lower flanges	1/16"-1/8" pitting		G S1 10-11	
11-12	West wind chord	±18 Laces	1/16"-1/8"		G S1 11-12 2	
	Bracing L11W-L12E	North lower flange under catwalk	1/8"-3/16" pitting with ragged edge for ±30", 2 rivets 75%		G S1 11-12 2	
		±50% Laces	1/16"-1/8"		G S1 11-12 2	
	Bracing L11E-L12W	South lower flange catwalk	1/8"-3/16" pitting		G S1 11-12 2	
		±5 Laces	Knife-edged		G S1 11-12 2	G,S1,11-12,N,17
	Bracing L10E-L11W	Edge of lower flange	1/16"-1/8" for ±18'		G S1 11-12 2	
	Top gusset at L11W	Rivets	3 rivets 75%		G S1 11-12 2	
	Bracing L11E-L12W at L11E	Underside of lower flange	1/16"-1/8"		G S1 11-12 2	
	Bottom gusset at L12W	Top surface	1/16"-1/8" over ±50% of area		G S1 11-12 2	

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
13-14	Bracing L13E-L14W	Vertical leg of lower flange under catwalk for ±30'	±3/16" pitting, 2 rivets 50%		G S1 13-14 2	G,S1,13-14,S,10
		Top surface of both flanges	1/16"-1/8" pitting full length		G S1 13-14 2	
		±20 laces	1/16"-1/8" pitting		G S1 13-14 2	
		±4 laces	Replace		G S1 13-14 2	G,S1,13-14,W,12
	Gusset at bracing intersection	Edges	1/16"-3/16" ragged		G S1 13-14 2	
	Bottom gusset at L13W	Top surface	1/16"-1/8" over ±75% of area		G S1 13-14 2	
	Bracing L13W-L14E at L13W	Lower back-to-back angles vertical legs	Knife-edged		G S1 13-14 2	
	Top gusset at L13E	Rivets	±5 rivets 50-75%		G S1 13-14 2	
	Bottom gusset at L14W	Top surface	1/16"-1/8" over ±50% of area		G S1 13-14 2	
14-15	Bracing L14E-L15W	±75% laces	1/8"-3/16" pitting		G S1 13-14 2	
		Lower flange, vertical leg under catwalk	1/8"-3/16" pitting for ±18"		G S1 13-14 2	G,S1,14-15,S,8
		Lacing rivets	1 rivet 50%		G S1 13-14 2	

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
14-15	Bracing L14W-L15E at L14W	Inside lower back-to-back angles	1/16"-1/8"		G S1 13-14 2	
		Lower flange, vertical leg under catwalk on north side	±50% loss for ±15" with 1 rivet 75%		G S1 13-14 2	G,S1,14-15,S,6
15-16	West wind chord	North upper stay plate top surface	1/16"-1/8" pitting over ±50% area		G S1 13-14 2	
	Bracing L15E-L16W	Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 15-16 2	
		±20 Laces	1/16"-1/8" pitting		G S1 15-16 2	
	Bracing L15W-L16E	Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 15-16 2	
		±16 Laces	1/16"-1/8" pitting		G S1 15-16 2	G,S1,15-16,SW,10
	Top gusset at L15W	Rivets	3 rivets 50%		G S1 15-16 2	
	Top gusset at L16E	Rivets	±12 rivets 50%		G S1 15-16 2	
	Top gusset at L16W	Top surface	1/16"-1/8" over ±50% of area		G S1 15-16 2	
		Rivets	±16 rivets 25-50%		G S1 15-16 2	
16-15'	Bracing L16E-L15'W	Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 15-16 2	
		±20 Laces	Replace		G S1 15-16 2	

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note ( )	Sketch No. Reference	Photo No. Reference
11-12	Bottom gusset at L12E	Top surface inside wind chord	1/16"-1/8"		G S1 11-12 2	
12-13	Bracing L12E-L13W	±14 Laces	1/16"-1/8"		G S1 11-12 2	
		±12 Laces	Replace		G S1 11-12 2	
		Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 11-12 2	
	Bracing L12W-L13E	±4 Laces	1/16"-1/8"		G S1 11-12 2	
		±2 Laces	Replace		G S1 11-12 2	
		Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 11-12 2	
13-14	East wind chord	±10 Laces	1/16"-1/8" spots		G S1 13-14 1	
	West wind chord	South upper stay plate top surface	1/16"-1/8" pitting over ±50% of area		G S1 13-14 1	
	Bracing L13W-L14E	Vertical leg of lower flange under catwalk on north side	±3/16" pitting for ±24" 3 rivets 50-75%		G S1 13-14 2	G,S1,13-14,S,8
		Vertical leg of lower flange under catwalk on south side	±3/16" pitting for ±36" 3 rivets 75%		G S1 13-14 2	G,S1,13-14,S,9
		±4 Laces	Replace		G S1 13-14 2	

Span &/or Bay	Member and Location	Affected Area	Degree of Corrosion or % Loss of Metal	Other Defects See Note( )	Sketch No. Reference	Photo No. Reference
16-15'	Bracing L16W-L15'E	Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 15-16 2	
		±8 Laces	1/16"-1/8" pitting		G S1 15-16 2	
		±4 Laces	Replace		G S1 15-16 2	
15'-14'	Bracing L15'W-L14'E	Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 15'-14'2	
		±30 Laces	1/16"-1/8" pitting		G S1 15'-14'2	
		±2 Laces	Ragged edge with 100% loss			
		Top surface of top flange	1/16"-1/8" pitting full length		G S1 15'-14'2	
	Bracing L15'E-L14'W	Top surface of lower flange under catwalk	1/16"-1/8" pitting		G S1 15'-14'2	
		Top surface of both flanges	1/16"-1/8" pitting full length		G S1 15'-14'2	
		±32 Laces	Replace		G S1 15'-14'2	
	Bottom gusset at L15'W	Top surface	1/16"-1/8" over ±50% of area		G S1 15'-14'2	
	Bottom gusset at L15'E	Top surface inside wind chord	1/16"-1/8" over ±75% of area		G S1 15'-14'2	
	Top gusset at L14'W	Top surface	1/16"-1/8" over ±25% of area		G S1 15'-14'2	

BEARINGS

Location	East or West Bearing	North or South Bearing	Defect or Corrosion	Sketch No. Reference	Photo No. Reference
So. Abutment	East		Anchor bolts on east side bent 1-3/4" and 1-5/8" to the north and on the west side 1-3/4" and 1-1/4" to the north		4
	West		Anchor bolts on east side bent 5/8" and 7/8" to the north and on the west side 1" and 1-1/8" to the west		1,2,3
No. Abutment	East		Anchor bolts on east side bent 1-3/4" towards the south and on west side bent 5/8" and 1" towards the south		11
	West		Anchor bolts on east side bent 1-1/2" and 1-1/4" towards the south and on the west side bent 3/8" and 1" towards the north		10,12
			The east edge of the last roller appears to be 0.05' further to the south as compared to the west edge of the roller.		
			Concrete all southeast corner of bearing area is cracked and sounds hollow.		13,14
Pier 2	East		±1" gap at southwest corner of bearing caused by base plate lifting at corners		9

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ON DECK INSPECTION

Span	Bay	Affected Area	Degree of Corrosion or Defect	Sketch No. Reference	Photo No. Reference
		DECK			
S3	0-1	Southbound lanes	1/16" short cracks ± 8" long	I S3 0-1	
		Northbound lanes	Asphalt unravelling ± 12" x ± 12" x 1/4" deep	I S3 0-1	
	1-2	Southbound lanes	1/16" crack ± 3'	I S3 1-2	
		Northbound lanes	1/16" short cracks ± 8" long	I S3 1-2	
	2-3	Both lanes	1/16" - 1/8" cracks	I S3 2-3	
	3-4	Both lanes	1/16" - 1/8" cracks	I S3 3-4	
	3-5	Northbound lanes	1/16" - 1/8" crack ± 28" long	I S3 4-5	
		West scupper	25% of openings clogged with debris	I S3 4-5	
	5-6	Northbound lanes	1/16" - 1/8" longitudinal cracks ± 12" - 36" long	I S3 5-6	
	6-7	Both lanes	1/16" - 1/8" cracks ± 3" - 24" long	I S3 6-7	
	7-8	Both lanes	1/16" cracks ± 6" - 24" long	I S3 7-8	
		Scuppers	10-25% of openings clogged with debris	I S3 7-8	
	8-9	Both lanes	1/16" cracks ± 12" - 30" long	I S3 8-9	
S1	9-10	Both lanes	1/16" cracks ± 6" - 24" long	I S1 9-10	
	10-11	Along centerline	Small ± 2" - 3" cracks	I S1 10-11	
	11-12	Both lanes	1/16" cracks ± 18" long	I S1 11-12	
	12-13	Southbound lanes	1/16" cracks ± 8" - 12" long	I S1 12-13	
		Northbound lanes	Asphalt unravelling to ± 1/4" depth over ± 6" x ± 24" area near curb	I S1 12-13	

Span	Bay	Affected Area	Degree of Corrosion or Defect	Sketch No. Reference	Photo No. Reference
S1	13-14	Southbound lanes	One crack 1/16" x ± 48" long	I S1 13-14	
	14-15	Southbound lanes	1/16" cracks ± 12" - 36" long	I S1 14-15	
	15-16	Both lanes	1/16" short cracks ± 8" - ± 12"	I S1 15-16	
	16-15'	Southbound lanes	1/16" ± 36" long crack plus some short cracks	I S1 16-15'	
	14'-13'	Both lanes	Few 1/16" short cracks ± 4-12" long	I S1 14'-13'	
	13'-12'	Both lanes	Few 1/16" short cracks	I S1 13'-12'	
	12'-11'	Southbound lanes	Few 1/16" short cracks ± 8" long	I S1 12'-11'	
	11'-10'	Southbound lanes West Scupper	Slight cracks 10% openings clogged with debris	I S1 11'-10' I S1 11'-10'	
	10'-9'	Both lanes	1/16" cracks ± 6" - ± 36"	I S1 10'-9'	
S2	8'-7'	Southbound lanes Northbound lanes	Few 1/16" cracks ± 6" - ± 24" long Some unravelling along curb	I S2 8'-7' I S2 8'-7'	
	4'-3'	East scupper	± 20% openings clogged with debris	I S2 4'-3'	
	1'-0'	Southbound lanes	Some 1/16" short cracks ± 12" long	I S2 1'-0'	

Span	Bay	Affected Area	Degree of Corrosion or Defect	Sketch No. Reference	Photo No. Reference
		RAILING			
S3	0-1	East side, 1st panel	1 vertical to be replaced, surface on rest of members	I S3 0-1	7
		West side	Surface rusting on 40-60% of verticals	I S3 0-1	
	1-2	East side	Minor rust spots on all members	I S3 1-2	1, 2
		West side	Surface rusting on 30-60% of verticals	I S3 1-2	
	2-3	East side	Minor rusting on all members with heavier rusting on verticals	I S3 2-3	8, 10
		West side	Surface rusting on 20-35% of verticals	I S3 2-3	
	3-4	East side	Minor rusting on all members with heavier rusting on verticals	I S3 3-4	
		West side	Surface rusting on 20-40% of verticals	I S3 3-4	
	4-5	East side	Random surface rusting on all members	I S3 4-5	
		West side	Surface rusting on 20-30% of verticals and minor rusting on all other members	I S3 4-5	
	5-6	East side	Random surface rusting on all members	I S3 5-6	
		West side	Surface rusting on 10-25% of verticals with random spots on all other members	I S3 5-6	4
	6-7	East side	Surface rusting on 25-50% of verticals with minor rusting on all other members	I S3 6-7	
		West side	Surface rusting on 10-25% of verticals with random spots on all other members	I S3 6-7	
	7-8	East side	Surface rusting on 25-75% of verticals with surface rusting on channels	I S3 7-8	3
		West side	Surface rusting on 10-30% of verticals with random spots on all other members	I S3 7-8	

Span	Bay	Affected Area	Degree of Corrosion or Defect	Sketch No. Reference	Photo No. Reference
S3	8-9	East side	Surface rusting on 25-75% of verticals with surface rusting on channels	I S3 8-9	
		West side	Surface rusting on 10-30% of verticals with random rust spot on all other members	I S3 8-9	
S1	9-10	East side	Surface rusting on 25-75% of verticals with surface rusting on channels	I S1 9-10	
		West side	Surface rusting on 15-25% of verticals	I S1 9-10	
	10-11	East side	Surface rusting on 25-50% of verticals with minor random spots on all other members	I S1 10-11	
		West side	Surface rusting on 20-40% of verticals with rust spots on posts and channels	I S1 10-11	
	11-12	East side	Surface rusting on 50-75% of verticals with 1/16" corrosion on bottom channel	I S1 11-12	11
		West side	Surface rusting on 10-30% of verticals with random rust spots on channels	I S1 11-12	
	12-13	East side	Surface rusting on 25-50% of verticals with random rust spots on post, nuts and channels	I S1 12-13	
		West side	Surface rusting on 10-30% of verticals with random rust spots on channels and posts	I S1 12-13	
	13-14	East side	Surface rusting on 50-60% of verticals with channels, nuts and posts having random surface rusting	I S1 13-14	
		West side	Surface rusting on 10-20% of verticals with random spots on channels and on washers at post anchor nuts	I S1 13-14	

Span	Bay	Affected Area	Degree of Corrosion or Defect	Sketch No. Reference	Photo No. Reference
S1	14-15	East side	Surface rusting on 50-75% of verticals with random rust spots on channels	I S1 14-15	
		West side	Surface rusting on 25-40% of verticals with random rust spots on channels and posts	I S1 14-15	
	15-16	East side	Surface rusting on 50-60% of verticals with minor random rust spots on channels	I S1 15-16	
		West side	Surface rusting on 25-40% of verticals with minor random rust spots on channels	I S1 15-16	
	16-15'	East side	Surface rusting on 30-40% of verticals with localized rusting on channels and nuts	I S1 16-15'	
		West side	Surface rusting on 40-50% of verticals with some rust spots on channels	I S1 16-15'	
	15'-14'	East side	Surface rusting on 25-35% of verticals with random spots on channels	I S1 15'-14'	
		West side	Surface rusting on ±50% of verticals with spots on channels	I S1 15'-14'	
	14'-13'	East side	Surface rusting on 25-35% of verticals with random spots on channels	I S1 14'-13'	
		West side	Surface rusting on 50-60% of verticals with minor rust spots on channels	I S1 14'-13'	
	13'-12'	East side	Surface rusting on 25-35% of verticals with random spots on channels	I S1 13'-12'	
		West side	Surface rusting on ±30% of verticals with random spots on channels	I S1 13'-12'	
	12'-11'	East side	Surface rusting on 25-40% of verticals with random spots on channels and posts	I S1 12'-11'	

Span	Bay	Affected Area	Degree of Corrosion or Defect	Sketch No. Reference	Photo No. Reference
S1	12'-11'	West side	Surface rusting on 30-50% of verticals with random spots on channels	I S1 12'-11'	
	11'-10'	East side	Surface rusting on 50-60% of verticals with random spots on posts and channels	I S1 11'-10'	
		West side	Surface rusting on 30-50% of verticals with random spots on channels	I S1 11'-10'	
	10'-9'	East side	Surface rusting on 25-30% of verticals with random spots on posts and channels	I S1 10'-9'	
		West side	Surface rusting on 50-60% of verticals with spots on posts, channels and brackets	I S1 10'-9'	
S2	9'-8'	East side	Surface rusting on 25-40% of verticals with random spots on posts and channels	I S2 9'-8'	
	9'-8'	West side	Surface rusting on 50-60% of verticals with spots on channels	I S2 9'-8'	
	8'-7'	East side	Surface rusting on 25-40% of verticals with random spots on posts and channels	I S2 8'-7'	
		West side	Surface rusting on 30-70% of verticals with spots on channels	I S2 8'-7'	
	7'-6'	East side	Surface rusting on 25-50% of verticals with random spots on bottom channels and posts	I S2 7'-6'	12,13
		West side	Surface rusting on 10-25% of verticals with random spots on channels	I S2 7'-6'	

Span	Bay	Affected Area	Degree of Corrosion or Defect	Sketch No. Reference	Photo No. Reference
S2	6'-5'	East side	Surface rusting on 25-40% of verticals with random spots on channels	I S2 6'-5'	
		West side	Surface rusting on ± 25% of verticals with random spots on channels	I S2 6'-5'	
	5'-4'	East side	Surface rusting on 25-35% of verticals with spots on channels and brackets	I S2 5'-4'	15
		West side	Surface rusting on 15-20% of verticals with spots on channels	I S2 5'-4'	
	4'-3'	East side	Surface rusting on 25-50% of verticals with spots on channels and brackets	I S2 4'-3'	14
		West side	Surface rusting on 25-35% of verticals with spots on channels and brackets	I S2 4'-3!	
	3'-2'	East side	Surface rusting on 25-50% of verticals with spots on channels and post nuts	I S2 3'-2'	16
		West side	Surface rusting on 25-30% of verticals with spots on channels and posts	I S2 3'-2'	
	2'-1'	East side	Surface rusting on 25-50% of verticals with spots on channels, post nuts and brackets. Also 2 rivets 50-75% on bracket	I S2 2'-1'	
		West side	Surface rusting on 10-25% of verticals with spots on channels and post brackets	I S2 2'-1'	
	1'-0'	East side	Surface rusting on ± 50% of verticals with spots on channels and end post	I S2 1'-0'	17
		West side	Surface rusting on 40-50% of verticals with spots on end post, post bracket and channels	I S2 1'-0'	18,19,20
			NOTE: All areas having surface rusting are in need of sandblasting and painting		

Span	Bay	Affected Area	Degree of Corrosion or Defect	Sketch No. Reference	Photo No. Reference
		LIGHTPOSTS			
South Approach		East side	Random surface rusting with 3 laces on north side having areas of ±50% metal loss and 2 laces on south side having areas of ±50% metal loss		
		West side	Random surface rusting, crack in granite cap piece on both faces at southwest and northwest anchor bolts		
South Abutment		East side	1/32"-1/16" surface rusting on all members, 2 missing rivets from top lacing on north side; replace 3rd set of lacing from top on northside		
		West side	Surface rusting on all members with 3 missing rivets from lacing on north side; replace 1 lacing bar in 2nd set from top, 1 missing rivet from 4th set of lacing bars		
S3	@pp5	East side	Random surface rusting, southeast and southwest nuts from anchor bolts 50% loss		6,9,21,5
		West side	Random rusting spots over entire post		
S1	@pp13	East side	Minor rusting spots on surfaces and cable clamps		
		West side	Random rusting spots on surfaces and conduit		

Span	Bay	Affected Area	Degree of Corrosion or Defect	Sketch No. Reference	Photo No. Reference
S1	@pp16	West side	Random rusting spots, nuts on clamp on north side need replacement		
	@pp13'	East side	Random rusting spots, rusting on nuts of clamp on south side		
		West side	Random rusting spots, nuts on north clamp rusted badly and need replacement		
S2	@pp5'	East side	Surface rusting on all members with northeast, northwest and southwest nuts for anchor bolts 50-75% metal loss		
		West side	Surface rusting on all members		
North Abutment		East side	Surface rusting on all members, 3 missing lacing rivets on south side, replace 1 lower lacing bar on north side, south corner of connection plate of light to concrete wall is not tight against wall		
		West side	Surface rusting on all members with 3 missing rivets on south side		
North Approach		East side	Random surface rusting on all members		
		West side	Random surface rusting on all members, 5 lacing bars on north side have areas of ± 50% cross section loss		

APPENDIX II

Portland Cement Association's Report on Concrete Core Tests

PORTLAND CEMENT ASSOCIATION
Old Orchard Road, Skokie, Illinois 60076 / Area Code 312 / 966-6200

Research and Development
Construction Technology Laboratories

June 14, 1976

Dr. Fred Chang
Ammann & Whitney
Two World Trade Center
New York, N. Y. 10047

Dr. Chang:

During the last few days we have had several telephone conversations regarding concrete core from Cape Cod bridges. Since we have not had any correspondence, I record some of our discussion, a description of the cores, and the suggested testing program.

You indicated that the bridges were built in about 1936, and the concrete contained lightweight aggregate (Haydite). Some portions of the deck were topped with normal weight concrete, and some repairs were made with normal weight concrete. You requested tests for compressive strength, chloride content and a petrographic examination.

Twelve concrete cores, 4-in. in diameter were received June 10. Cores numbered "S" and "B" refer to the Sagamore and Bourne bridges, respectively.

The cores are described as follows:

S-1 - 4-in. long, lightweight aggregate, some honeycomb.

S-2 - 6-in. long, normal weight aggregate, very good condition, 3.5 in. asphalt.

S-3 - 4-in. long, lightweight with 1-2 in. normal weight topping, relatively good condition, core bit kerf 1-in. deep in top.

S-4 - 3-in. long, lightweight with 2-in. normal weight topping, lightweight much honeycomb.

S-5 - 4.5-in. long, lightweight, poorly compacted, 4-in. asphalt.

S-6 - Top 4-in. normal weight, good condition. Bottom 5-in. normal weight, very bad honeycomb.

B-1 - 2 cores, all lightweight, 4-in. long, much honeycomb, corroded steel.

B-2 - 6 in., all lightweight, honeycomb, 2-in. asphalt.

B-3 - 6 in., all lightweight, good condition, 2-in. asphalt.

B-4 - 6 in., all lightweight, on large honeycomb, no asphalt.

B-5 - 6 in., all lightweight, vertical epoxy filled joint, one side good, other side honeycomb (repair job), no asphalt.

B-6 - 6 in., lightweight, including 2-in. lightweight topping, relatively good, 2-in. asphalt.

You requested the following tests:

Compressive strength:

S-2, S-3, B-2, B-3, B-6

Petrographic examination:

S-1, S-4, S-6, B-1

Chloride (top and bottom sections):

S-5, S-6, B-1, B-4

Charges will be:

Compressive strength - $50/core		
5 x 50	=	$250
Petrographic examination - $150/core		
4 x 150	=	$600
Chloride analysis - $75/core (2 samples)		
4 x 75	=	$300
		$1150

PORTLAND CEMENT ASSOCIATION

We will have a report for you in three weeks, sooner, if possible. Attached is a brochure, "Research and Engineering Service Capabilities, PCA/CTL."

Sincerely,

J. J. Shideler

J. J. Shideler, Director
Administrative and Technical
Services

JJS/bl

Attachment

Copy to-
Allen Custen, Ammann & Whitney
W.E. Kunze
E. Hognestad
D.H. Campbell
J.R. Polky

CT-0230

PORTLAND CEMENT ASSOCIATION
Old Orchard Road, Skokie, Illinois 60076 / Area Code 312 / 966-6200

Research and Development
Construction Technology Laboratories

June 30, 1976

Dr. Fred Chang
Ammann & Whitney
Two World Trade Center
New York, N. Y. 10047

Dr. Chang:

Attached are reports by Dr. D. H. Campbell and M. F. Pistilli, giving results of petrographic (microscopic) examination, compressive strength, and chloride content of twelve concrete cores from the Cape Cod bridges. These reports, my letter of June 14, 1976, describing the cores and detailing the requested testing program, together with this brief summary constitute our report.

The petrographic report and tabulation of compressive strengths, indicate that the lightweight concrete was generally very poorly compacted, several cores had very large areas of honeycomb. Photographs of two cores are included to indicate the more extreme conditions (you stated that you had photographs of all cores so only three photographs are included in this report). The single all normal weight concrete core, S-2, was of very good quality with a compressive strength of 8140 psi. You indicated that this core was from some relatively recent repair work. Some rebars are severly corroded while others are in good shape.

Chloride analysis of four cores shows that the chloride content of Core B-1 was 0.84% in the top and 01.13% in the bottom, with the chloride expressed as calcium chloride dihydrate ($CaCl_2 \cdot 2H_20$). This particular core was in very poor condition. Cores B-4 and S-6 had considerable chloride in bottom with essentially none in the top. Core S-5 had an insignificant amount of chloride.

PORTLAND CEMENT ASSOCIATION

If you have any questions, or if we can be of further service, please call.

Sincerely,

J. J. Shideler

J. J. Shideler, Director
Administrative and Technical
Services

JJS/rs

Copies to-
W. E. Kunze/E. Hognestad/D. H. Campbell/M. F. Pistilli

CT-0230/4110

Encl.

June 30, 1976

J. J. Shideler

C E N T E R

Twelve concrete cores taken from the Sagamore (S) and Bourne (B) Bridges in the Cape Cod area have been received from Dr. Fred Chang of Ammann & Whitney for determination of chlorides, compressive strength, and petrography. The latter two tests are subjects of this report.

Compressive strength tests were performed in accordance with ASTM C-42, tested in a wet condition and corrected for L/D. Compressive strengths were:

Core No.	Strength(psi)	Coarse Agg.	Unit Wt.(pcf)	Condition
B2	1320	Haydite	102.2	Honeycomb
B3	4130	Haydite	117.4	good
B6	2460	Haydite	109.6	relatively good
S2	8140	"trap"	154.6	very good
S3	3040	"trap"/Haydite	118.0	relatively good

The presence of honeycomb obviously decreases the compressive strength of the lightweight concrete, which is commonly of relatively lower strength. The unit weights generally correlate with core compressive strengths: weakest cores have low unit weights and abundant entrapped air or honeycomb.

Honeycomb (fig. 1) occurs in Cores S-1, S-4, S-5, S-6, B-1, B-2, B-4, and B-5 indicating various degrees of consolidation from grossly to moderately underconsolidated.

Core B-1 contains Haydite (a bloated silty shale) as coarse and fine aggregates. Traces of micaceous metasandstone also occur. The paste, as seen in thin section (20 microns thick), contains a few relatively coarse grains of unhydrated portland cement (UPC's). Hydration products, pseudomorphic after cement particles, are common, forming an overall texture of the paste in such a way as to suggest in-situ hydration of an initially, very low water/cement ratio

paste. Many voids contain encrusted ettringite or calcite. Microcracks are common, passing thru aggregates.

Core S-6 contains a coarse aggregate of "traprock" which includes gabbro, dolerite, and basalt. Fine aggregates are quartz, microcline, aplite (very fine-grained granite), and metaquartzite. The rather strong paste contains abundant UPC's. Calcium hydroxide is common as coarsely crystalline fringes partially surrounding aggregates and as concentrations within the paste. Many of the residual unhydrated alite grains show prominent rims. The paste is locally intensely carbonated. Entrained air is approximately 2-3 percent. Honeycomb is abundant, some voids being as much as two centimeters long.

Core S-4 shows a gabbro-basalt aggregate topping over Haydite concrete, the contact between the two is partially open and is consequently weak. Microcracks occur in both concretes. Paste characteristics for each concrete are like those described above.

Core S-1 is Haydite concrete with abundant honeycomb and general characteristics like B-1.

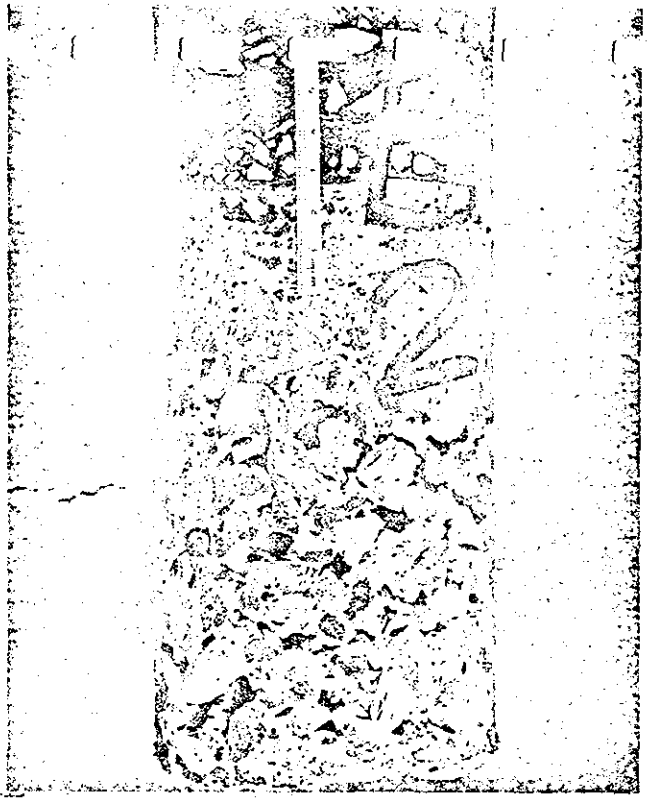
Intensely corroded rebar (fig. 1c) occurs in Cores S-6 and B-1 where the surrounding concrete contains deposits of iron oxide and numerous microcracks due to expansion of the oxidation products.

In terms of materials and type of application the Haydite concrete is obviously inadequate due to lack of consolidation, greatly facilitating cyclic freeze-thaw damage and paste deterioration via deicer chemicals. Petrographic observations of the paste revealing microcracks, some open or partially filled with ettringite, suggest continuing deterioration.

D. H. Campbell

D. H. Campbell/rs
Senior Research Petrographer
Technical Services Section

CT-0230/4110



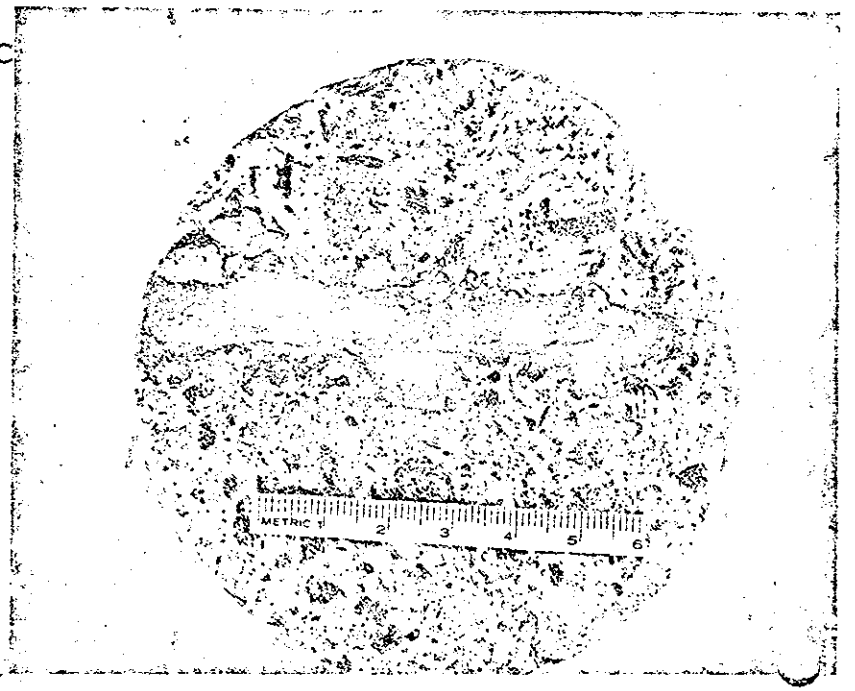


Fig.1 A--Core S-6 with honeycombed Haydite-aggregate concrete overlain by traprock-aggregate concrete. Six-centimeter scale. B--Core B-2 with abundant honeycombed Haydite-aggregate concrete. Compressive strength is 1320 psi. C--Core B-1 with intensely corroded rebar and adjacent corrosion products.

Prd. No. CT-

Structure - Bridge

Date - June 16, 1976

Client - Ammann & Whitney

COMPRESSIVE STRENGTH TESTS
Portland Cement Association

Core Diameter - 3.75
Area - .7854 $(3.75)^2$ = 11.04 in^2

Location - Cape Cod

Broken by - G. Dill

Checked by - D. H. Campbell

Core Number	Location	Original Length	Capped Length	Date Rec'd	Maximum Load	Comp. Strength (psi)	L/D	Corr. Factor	Corr. Comp. Strength	Age	Comments
B2		5.40	5.55		15000	1360	1.48	.97	1320		Wet tested
B3		4.55	4.80		49000	4440	1.28	.93	4130		Steel (rebar)
B6		5.30	5.50		28000	2540	1.47	.97	2460		
S2		6.35	6.50		90750	8220	1.73	.99	8140		Steel (mesh)
S3		5.20	5.35		35000	3170	1.43	.96	3040		

PORTLAND CEMENT ASSOCIATION *inter-office correspondence*

June 30, 1976

J. J. Shideler

C E N T E R

Re: Chloride content of the top and bottom portion of four concrete cores from the Sagamore and Bourne bridges near Cape Cod. (Dr. Fred Chang, Ammann & Whitney, Two World Trade Center, New York, New York).

Two cores, marked B-1 and B-4 were lightweight concrete from the Bourne bridge. Cores marked S-5 lightweight concrete and S-6 normal weight concrete were from the Sagamore bridge.

The chloride contents were determined by potentiometric titration with silver nitrate. The enclosed results are reported using three different expressions (all expressions being equivalent with respect to chloride). The cement content in the lightweight cores was assumed to have been 6-1/2 bags/yd^3. The normal weight core was assumed to have had 6 bags/yd^3.

Cores B-1, B-4 and S-6 had higher chloride in the bottom. Only core No. S-5 had insignificant chloride in both top and bottom portions.

M. F. Pistilli

M. F. Pistilli/rs
Research Chemist
Technical Services Section

CT-0230

CLORIDE ANALYSIS (EXPRESSED IN THREE FORMS)

CT-0230

Sample Core Identification	B-1 Lightweight Concrete		B-4 Lightweight Concrete		S-5 Lightweight Concrete		S-6 Normal weight Concrete	
	Top	Bottom	Top	Bottom	Top	Bottom	Top	Bottom
% Chloride by weight of Dry concrete	0.087%	0.0117	0.003	0.191	0.003	0.003	0.002	0.067
Lbs. of Chloride [Cl^-]pcy	2.42 lbs.	3.25	0.08	5.31	0.08	0.08	0.08	2.51
Chloride as % Calcium Chloride Dihydrate by wt. of cement	0.84	1.13	0.03	1.84	0.03	0.03	0.02	0.93

PORTLAND CEMENT ASSOCIATION
Old Orchard Road, Skokie, Illinois 60076 / Area Code 312 / 966-6200

Research and Development
Construction Technology Laboratories

August 20, 1976

Dr. Fred Chang
Ammann & Whitney
Two World Trade Center
New York, New York 10047

Dr. Chang:

Attached are two reports giving results of chloride analysis of concrete cores from the Cape Cod Bridges.

The report dated July 30, 1976 by M. F. Pistilli confirms previous data that appeared to be suspect in our report of June 30, 1976. These second samples were taken about 1 in. above or below the first samples so the reported values are about as would be expected.

In subsequent conversation you requested chloride determination on all other cores available for such tests. The report dated August 6, 1976 by J. R. Polky gives results of chloride analysis on slices from the upper and lower portions of the remaining eight cores. As indicated above, most of these samples were taken about an inch from the top and bottom surfaces, because some of the surface slices were used for other tests.

With respect to consideration of corrosion, the bottom portions of Cores B-3 and B-5 with 3.3 and 7.3 lbs. chloride/yd.^{3}, respectively, have more than the recognized limit of 1 to 1.3 lbs./yd.^{3}. Amounts of chloride in all other cores are considerably below this threshold level.

We do not have any suggestions for further tests, but if you have any questions or if we can be of further service, please call.

Sincerely,

J. J. Shideler

J. J. Shideler, Director
Administrative and Technical Services

JJS/jd

Attach.
CT-0230

Copy to- W. E. Kunze
E. Hognestad
L. M. Meyer
M. F. Pistilli
J. R. Polky

PORTLAND CEMENT ASSOCIATION *inter-office correspondence*

July 30, 1976

J. J. Shideler

C e n t e r

Re: Second determination of chloride content in Core No. S-5 and Core No. S-6. The determinations were made on specimens 1 inch above the previous determinations of the bottom portion.

	S-5 Lightweight Concrete 1 inch above the bottom	S-6 Normal Weight Concrete 1 inch above the bottom
% chloride by weight of dry concrete	.002%	0.04%
Lbs. of chloride (Cl^-) pcy	0.06	1.46
Chloride as % calcium chloride dihydrate by weight of cement	0.02%	0.53%

M. F. PISTILLI
Research Chemist
Technical Services Section
CT-0230
jd

PORTLAND CEMENT ASSOCIATION
Old Orchard Road, Skokie, Illinois 60076

ANALYTICAL REPORT

Anal. Lab. No.
Your Lot No.

Date 8-6-76
Report No. CT-0230

Sample: 8 concrete cores from bridge decks

Submitted by:

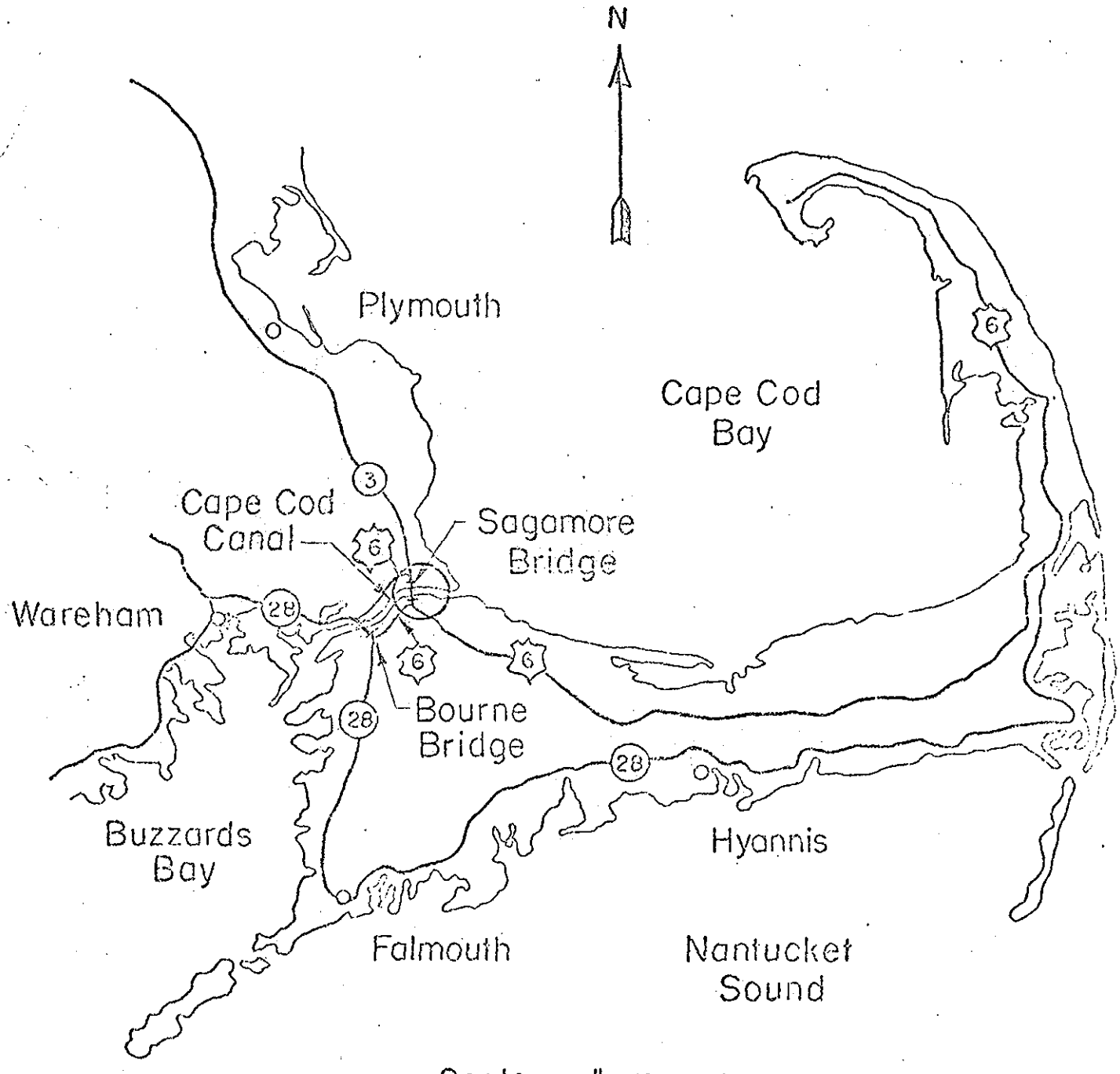
Analysis Desired: chloride from top and bottom cuts

Core	Weight % Chloride		Pounds Chloride/yd.^{3} Concrete*	
	Top	Bottom	Top	Bottom
B-2	<.0018	<.0018	<.07	<.07
B-3	<.0018	0.0831	<.07	3.32
B-5	0.0062	0.183	0.25	7.32
B-6	<.0018	0.0094	<.07	0.38
S-1	0.0018	<.0018	0.07	<.07
S-2	<.0018	<.0018	<.07	<.07
S-3	<.0018	0.0160	<.07	0.64
S-4	<.0018	0.0079	<.07	0.32

*Assumed 4000 pounds concrete/yd.^{3}.

John R. Polky
8-6-76

FIG. 1



Scale: 1" = 7.1 Miles

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
CAPE COD CANAL, MASSACHUSETTS

SAGAMORE HIGHWAY BRIDGE
1976 CONDITION REPORT

LOCATION MAP

AMMANN & WHITNEY, N.Y., N.Y.

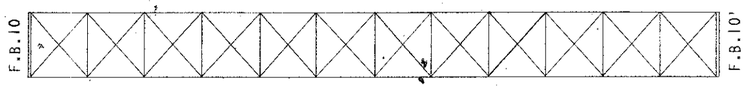
PLATE I
FIG. 2

SWAY BRACING SOUTH END

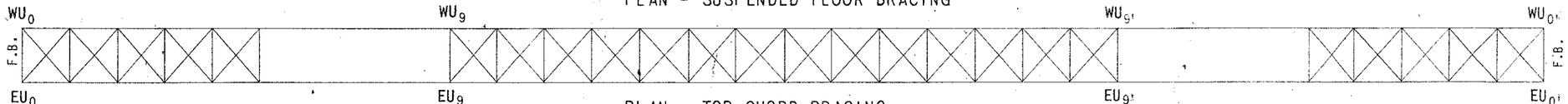
PANEL 0 | PANEL 5 | PANELS 6, 7 & 8 | PANEL 9 | PANEL 10

SWAY BRACING NORTH END

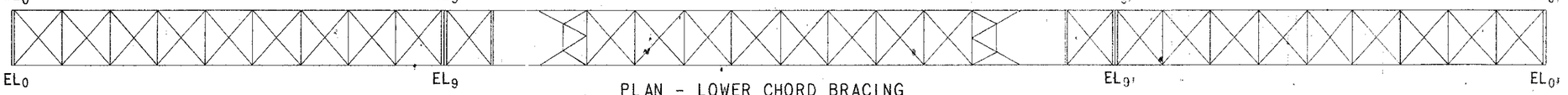
PANEL 10' | PANEL 9' | PANELS 6', 7' & 8' | PANEL 5' | PANEL 0'



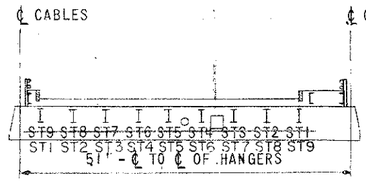
PLAN - SUSPENDED FLOOR BRACING



PLAN - TOP CHORD BRACING



PLAN - LOWER CHORD BRACING



SECTION A-A

ELEVATION

LEGEND

E = EAST
W = WEST
F.B.= FLOOR BEAM
L = LOWER CHORD PANEL POINT
U = UPPER CHORD PANEL POINT
MLW = MEAN LOW WATER BASED ON MSL=100

DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASSACHUSETTS
CAPE COD CANAL
BOURNE, MASS.
SAGAMORE HIGHWAY BRIDGE
1969 CONDITION REPORT
KEY PLAN

VL-51
C-2

FAY, SPOFFORD & THORNDIKE, ENGINEERS, BOSTON, MASS.

FIG. 3 PLATE II

REINFORCING TRUSSES
Spaced 6" c. to c. Depth 5" out to out of truss and cambered as shown. Top and bottom chord-area each chord = 0.44 sq. in. web area to average ¼" per lin. ft. of truss

SECTION A-A
Continuous flat steel supports at all stringers.

CROSS SECTION OF ROADWAY - SPAN 1
(Except as noted)

CROSS SECTION OF ROADWAY - SPANS 4 & 7 AS SHOWN - SPANS 1,2,3,5 & 6 AS NOTED

DETAIL AT INTERMEDIATE FENCE POST

DETAIL OF PULL BOX

DETAIL OF WALKWAY (included for payment with structural steel)

FENCE DETAILS

ELEVATION INTERMEDIATE FENCE POST

TYPICAL DETAIL AT HANGER

DETAIL OF TRAFFIC MARKER

SECTION SPANS 2 & 3

SECTION SPAN 6

SECTION B-B

SECTION E-E

SECTION C-C

DETAIL OF CHANNEL CONNECTION TO FLOOR BEAM

SPACING SCHEDULE FENCE POSTS		
Span	No. of spaces per Panel	Distance between Posts c. to c.
7	4	7'-6"
5	5	6'-9"
3	6	7'-4"
1	6	7'-4"
2	6	7'-4"
4	4	7'-6"
6	4	6'-6"

Legend:
Concrete in Section shown thus:
Reinforcing steel in section shown thus:
Reinforcing Truss web shown thus:

Notes:
For Spans 1, 2 and 3 see Sheets No. 6-11 inclusive.
For Spans 4, 5, 6 and 7 see Sheets No. 12-15 inclusive.
For details of expansion joints see Sheet No. 5
Bottom of concrete slab to be flush with bottom of top flange of stringers.
All steel to be Carbon unless otherwise noted.
For detail of scuppers see Sheet No. 5
For detail of Lamp post see Sheet No. 10
Rivets to be ⅞" ϕ - Open holes to be 15/16" ϕ (Holes 1⅛" in ℓ. Bm.)
For Section D-D see Sheet No. 5
All fence posts to be vertical.

NOTE:
ONLY SPANS 1, 2, AND 3 ARE APPLICABLE TO SAGAMORE BRIDGE. PLAN REVISED TO SHOW CONDITION AT TIME OF INSPECTION. AUG., 1969

WAR DEPARTMENT
CORPS OF ENGINEERS U.S. ARMY
OFFICE OF DISTRICT ENGINEER, BOSTON, MASS.
HIGHWAY BRIDGES
OVER CAPE COD CANAL
AT BOURNE, MASSACHUSETTS

SAGAMORE AND BOURNE BRIDGES
DECK SECTIONS
SCALE EXCEPT AS SHOWN

FAY, SPOFFORD & THORNDIKE, ENGINEERS
BY Edward M. Spofford

CRAM & FERGUSON, CONSULTING ARCHITECTS
BY E. Cram Ferguson

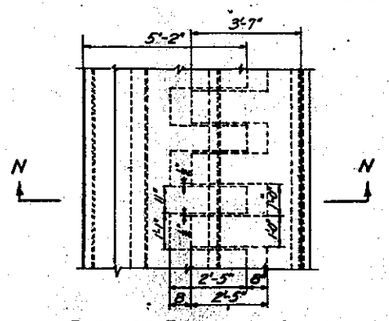
APPROVED
LT. COL. CORPS OF ENGINEERS
DECEMBER 1933

SUPERSTRUCTURE CONTRACT PLANS SHEET No. 4 OF (17)

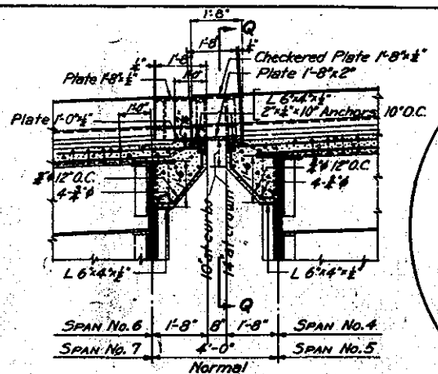
FAY, SPOFFORD & THORNDIKE
BOSTON, MASSACHUSETTS
DESIGNED BY M.B.S.
DRAWN BY M.B.S.
TRACED BY J.T.
CHECKED BY W.L.C.
SCALE 1"=1' EXCEPT AS SHOWN

11 51
C-3

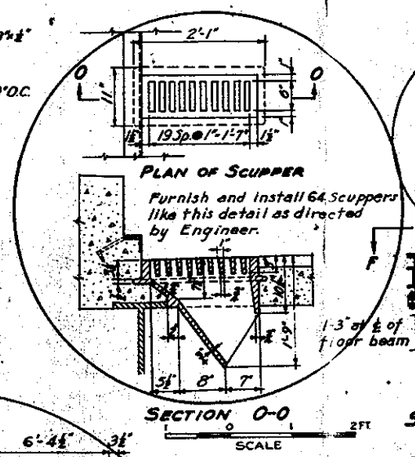
PLATE III
FIG. 4

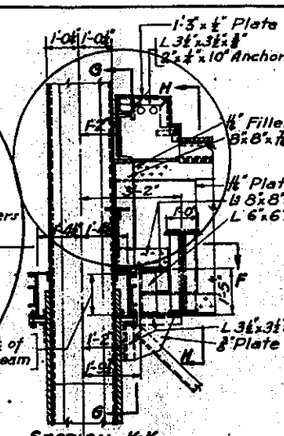


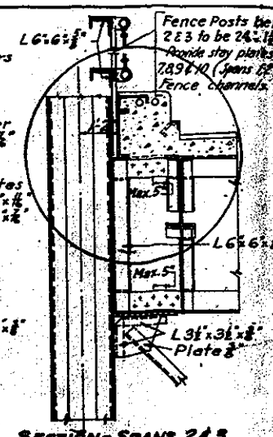
PLAN OF EXPANSION JOINT

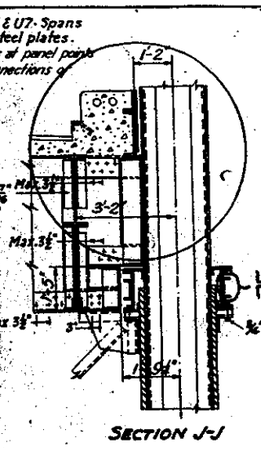


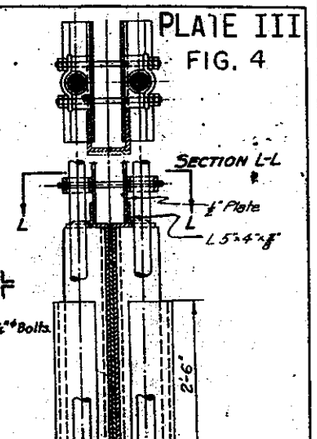
EXPANSION JOINT DETAILS
(BOURNE BRIDGE ONLY)

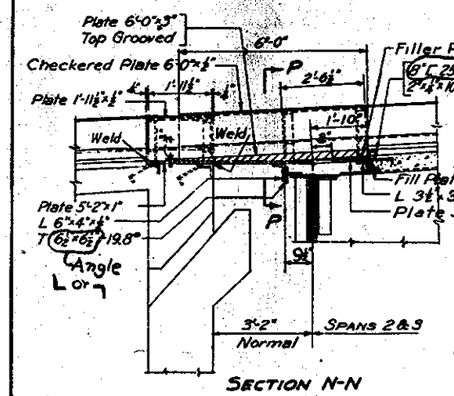




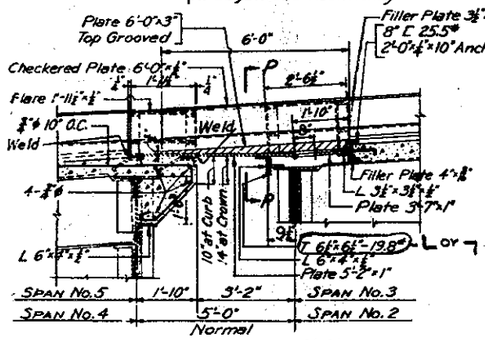




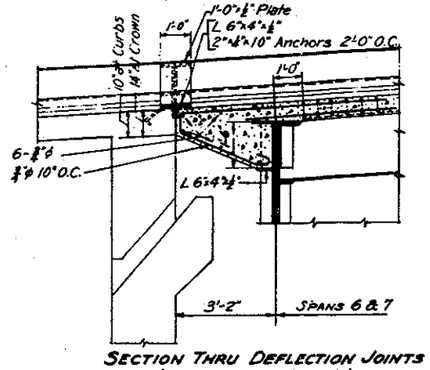




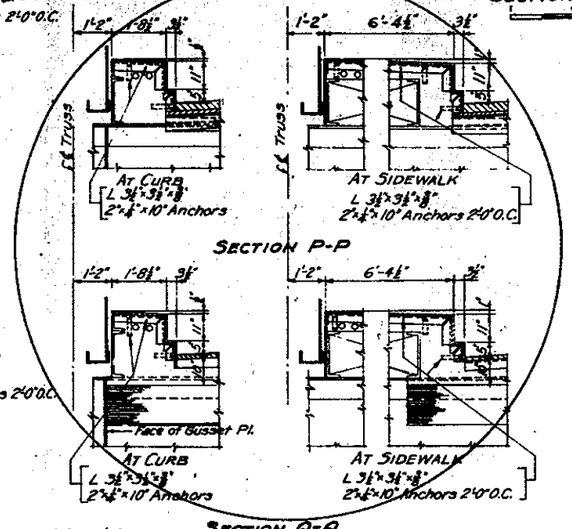
SECTION N-N
(At Sagamore Abutments)

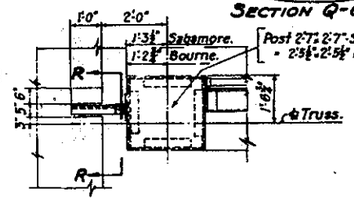


SECTION N-N
(Bourne Bridge only)

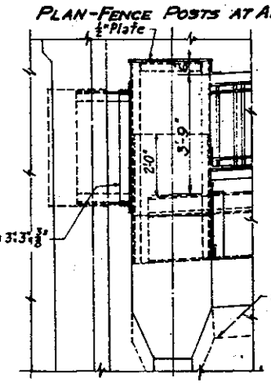


SECTION THRU DEFLECTION JOINTS
(At Bourne Abutments)

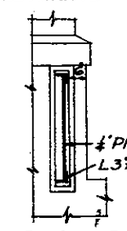


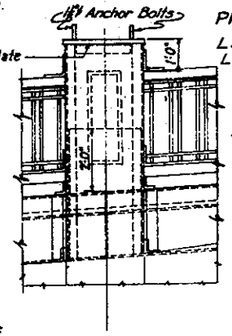


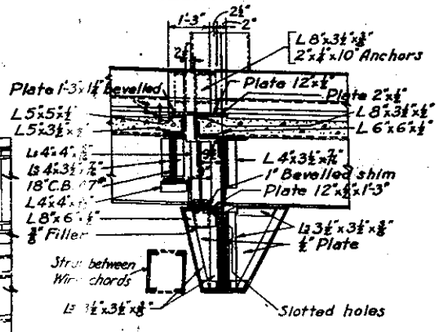
PLAN-FENCE POSTS AT ABUTMENTS



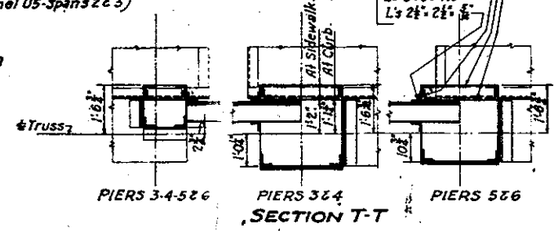
DETAIL OF FENCE POST AT ABUTMENTS



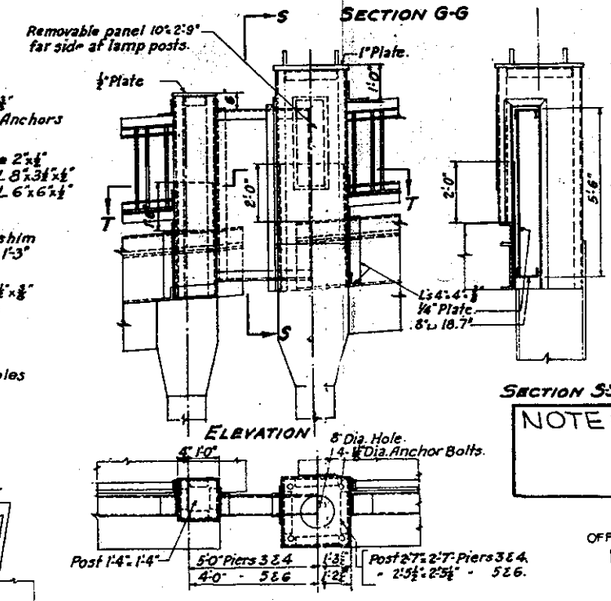




INTERMEDIATE LAMP POST BASE
(Panel U5-Spans 2 & 3)



SECTION H-H



FAY, SPOFFORD & THORNDIKE ENGINEERS BOSTON, MASSACHUSETTS	
DESIGNED BY	M.B.S.
DRAWN BY	M.B.S.
TRACED BY	J.T.
CHECKED BY	W.L.E.
SCALE 0 1 2 FT = 1 Inch	

WAR DEPARTMENT
CORPS OF ENGINEERS U. S. ARMY
OFFICE OF DISTRICT ENGINEER, BOSTON, MASS.

HIGHWAY BRIDGES
OVER CAPE COD CANAL
AT BOURNE, MASSACHUSETTS

SAGAMORE AND BOURNE BRIDGES
DECK DETAILS

SCALE EXCEPT AS SHOWN
2 1 0 2 4 6 8FT

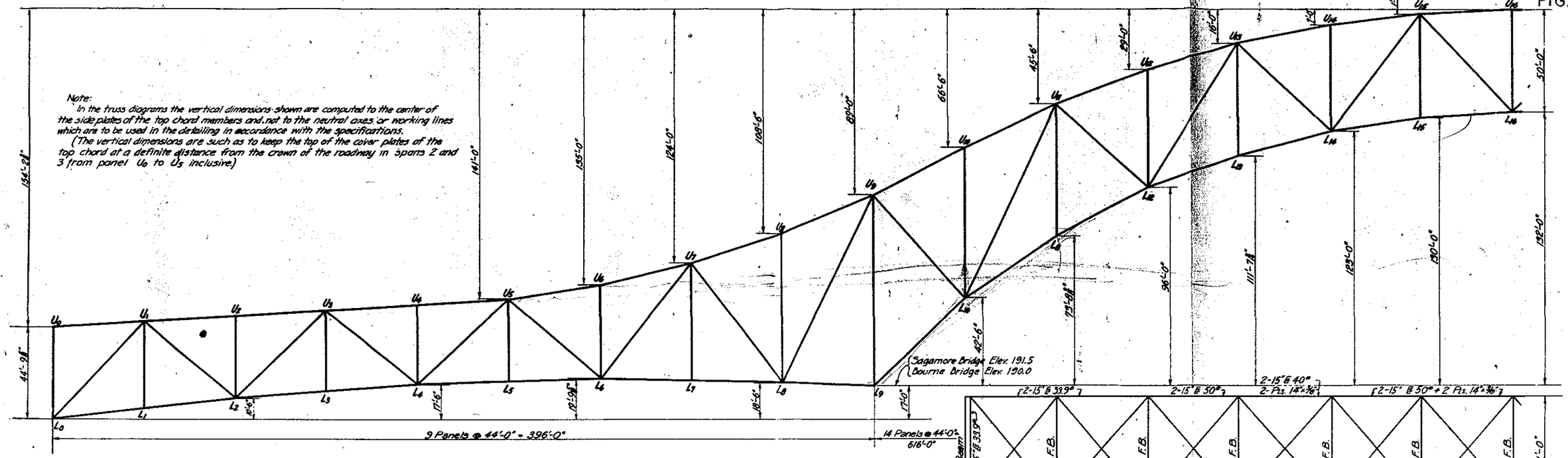
APPROVED
LT. COL. CORPS OF ENGINEERS
DECEMBER 1933

FAY, SPOFFORD & THORNDIKE, ENGINEERS.
BY
CRAM & FERGUSON, CONSULTING ARCHITECTS.
BY

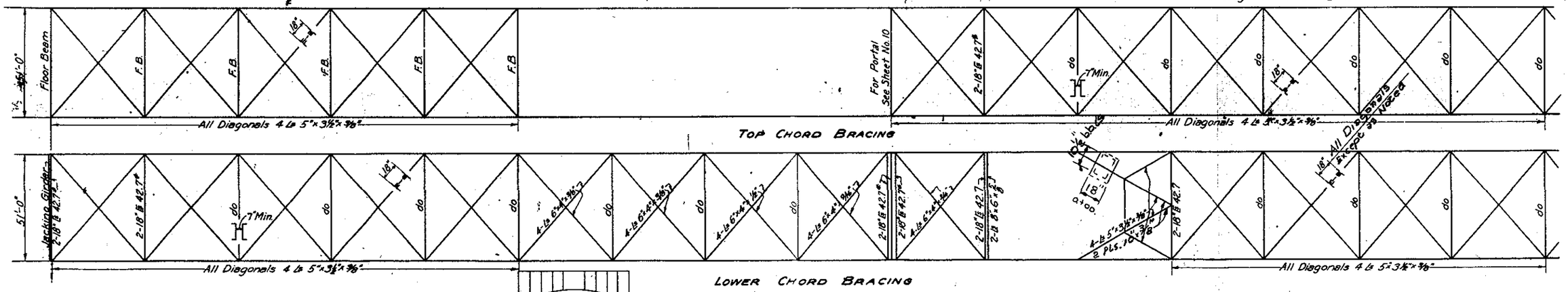
SUPERSTRUCTURE CONTRACT PLANS SHEET No. 5 OF (17)

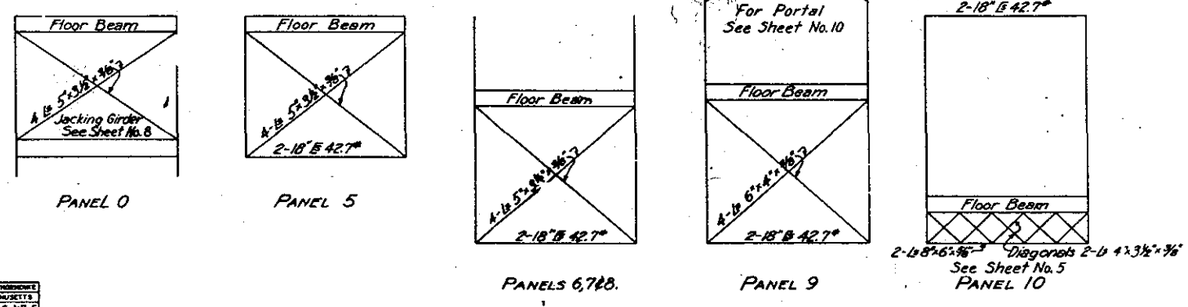
FIG. 5

Note:
In the truss diagrams the vertical dimensions shown are computed to the center of the side plates of the top chord members and not to the neutral axes or working lines which are to be used in the detailing in accordance with the specifications.
(The vertical dimensions are such as to keep the top of the cover plates of the top chord at a definite distance from the crown of the roadway in Spans 2 and 3 from panel U_0 to U_5 inclusive.)



HALF ELEVATION SPANS 1, 2 & 3.





Notes:
For General Elevations - see Sheets No. 2 and 3
For Deck Sections and Details see Sheets No. 4 and 5
For Stress Sheet see Sheet No. 7
For Truss Details (Spans 1, 2 and 3) see Sheets No. 8 to 11 inclusive
For Truss Bearings (Spans 1, 2 and 3) see Sheet No. 16
For Detail of Jacking Girder see Sheet No. 8
All elevation are referred to a datum 100 feet below Mean Sea Level

FAY, SPOFFORD & THORNDIKE, ENGINEERS
BY Lawrence M. Spofford

FAY, SPOFFORD & THORNDIKE
BOSTON, MASSACHUSETTS
DESIGNED BY R.E.C. W.L.C.
DRAWN BY W.L.C.
TRACED BY E.T.M.
CHECKED BY J.B.W.
SCALE - 1" = 50'

WAR DEPARTMENT
CORPS OF ENGINEERS U. S. ARMY
OFFICE OF DISTRICT ENGINEER, BOSTON, MASS.

HIGHWAY BRIDGES

OVER CAPE COD CANAL
AT BOURNE, MASSACHUSETTS

SAGAMORE AND BOURNE BRIDGES
TRUSSES AND BRACING - SPANS 1, 2 AND 3

20 10 0 20 40 60 80 FT.
SCALE

APPROVED
LT. COL. CORPS OF ENGINEERS
DECEMBER 1935

SUPERSTRUCTURE CONTRACT PLANS SHEET No. 6 OF (17)

L 31
C-5

MEMBERS IN SPANS 2 AND 3

BAR	DEAD STRESS	LIVE STRESS UNIF.	LIVE STRESS CONC.	LIVE STRESS TOTAL	% I	IMP.	LIVE & IMP.	ERECTION DEAD + TRAV. A	ERECTION DEAD + TRAV. B	WIND COMP. STRUCT.	WIND ERECTION A	WIND ERECTION B	D+L+I	D+[L+I]+W	TOTAL ERECT. A	TOTAL ERECT. B	DESIGN STRESS BASIS OF 32,400	LENGTH	MAKE-UP OF SECTIONS	ASSEMBLY	RADIUS OF GYRATION	AREA
Lo L1	+411	+193 -69	+30 -5	+223 -74	6 7	+13 -5	+236 -79	+1	+688	+80 -152	+156 -252	+120 -216	+647	+963	+157 -231	+808	+963 -210	44.31	4 Ls 6"x4"x 5/16" 2 Webs 30"x 1/2"	(S)		G. 448 N. 361
L1 L2	+411	+193 -69	+30 -5	+223 -74	6 7	+13 -5	+236 -79	+1	+688	+139 -217	+239 -301	+216 -301	+647	+1022	+294 -300	+904	+1022 -273	44.31	Same as Lo L1	(S)	do	G. 446 N. 361
L2 L3	+646	+442 -226	+64 -17	+505 -242	6 7	+28 -16	+534 -258	-312	+1512	+375 -451	+631 -699	+551 -626	+1180	+2120 -547	+319 -1011	+2063	+2120 -920	44.14	4 Ls 6"x4"x 9/16" 4 Webs 30"x 1/2"	(S)		G. 812 N. 664
L3 L4	+646	+442 -226	+64 -17	+505 -242	6 7	+28 -16	+534 -258	-312	+1512	+430 -500	+691 -750	+625 -688	+1180	+2175 -596	+379 -1062	+2197	+2175 -967	44.14	Same as L2 L3	(S)	do	G. 812 N. 664
L4 L5	-129	+417 -369	+56 -27	+473 -396	6 7	+26 -26	+499 -422	-1074	+1240	+620 -670	+1028 -1077	+892 -942	+614 -756	+1982 -2104	-2151	+2132	+1982 -2104	44.02	4 Ls 6"x4" x 1/2" 4 Webs 30"x 5/16	(S)	r_o= 9.7 r_y=11.3	G. 94. N. 166
L5 L6	-129	+417 -369	+56 -27	+473 -396	6 7	+26 -26	+499 -422	-1074	+1240	+624 -676	+974 -1077	+873 -942	+614 -756	+1986 -2104	-2151	+2113	+1986 -2104	44.02	Same as L4 L5	(S)	do	do	G. 94. N. 166
L6 L7	-1340	+152 -387	+22 -27	+154 -414	7 5	+11 -22	+165 -436	-1660	-37	+405 -493	+591 -660	+506 -615	-1776	-2705	-2320	+469 -652	+427 -2705	44.00	4 Ls 6"x4"x 9/16" 4 Webs 30"x 3/16"	(S)	r_o= 9.6 r_y= 11.1	G. 111.2 N. 906
L7 L8	-1340	+132 -387	+22 -27	+154 -414	7 5	+11 -22	+165 -436	-1660	-37	+327 -423	+374 -538	+352 -512	-1776	-2635	-2198	+315 -549	+286 -2685	44.00	4 Ls 6"x4"x 9/16" 4 Webs 30"x 5/16" 3/4"	(S)	r_o= 9.6 r_y= 11.1	G. 1038 N. 845
L8 L9	-2070	+51 -481	+6 -22	+56 -503	10 4	+5 -22	+62 -525	-1781	-1033	+305 -355	+55 -127	+28 -144	-2595	-3475	-1908	-1177	-3475	44.03	4 Ls 8"x6"x 13/16" 4 Webs 30"x 3/16	(S)	r_o=10.2 r_y=10.8	G. 1328 N.	
Lo U1	0	0 0	0 0	0 0	0 0	0 0	0 0	0		-45	-69	-49	0 0	-45	-69	-49	-63	44.08	1-C.P. (24"x 3/8") 23" 4-Ls 6"x4"x 9/16" 2-Webs 30"x 3/16"		r_o=11.4 r_y=10.7	G. 459
U1 U2	-651	+147 -349	+11 -53	+158 -401	7 6	+10 -23	+168 -424	+96	-1225	+111 -115	+335 -426	+210 -272	-1075	-1614	+491 -930	-1497	+992 -1614	44.08	1-C.P. (24"x 3/8") 23" 4-Ls 6"x4"x 9/16" 2-Webs 30"x 3/16	(S)	r_o=10.8 r_y=11.	G. 716 N. 595
U2 U3	-651	+147 -349	+11 -53	+158 -401	7 6	+10 -23	+168 -424	+96	-1225	+110 -94	+404 -475	+245 -281	-1025	-1593	+500 -979	-1506	+455 -1593	44.08	Same as U1 U2	(S)	do	do	G. 714 N. 595
U3 U4	-391	+308 -474	+23 -66	+331 -540	7 6	+22 -30	+352 -570	+654	-1550	+286 -284	+833 -898	+557 -591	+117 -1000	+933 -2031	+1487 -244	-2141	+1352 -2031	44.08	1-C.P. (24"x 1/2") 23" 4-Ls 6"x4"x 1/2" 2-Webs 30"x 3/16"	(S)	r_o=10.9 r_y=10.9	G. 716 N. 629
U4 U5	-391	+308 -474	+23 -66	+331 -540	7 6	+22 -30	+352 -570	+654	-1550	+309 -925	+942 -1007	+640 -674	+117 -1000	+956 -2072	+1596 -353	-2224	+1452 -2072	44.08	Same as U3 U4	(S)	do	do	G. 716 N. 629
U5 U6	+794	+398 -284	+29 -40	+427 -324	7 6	+28 -18	+455 -342	+1479	-655	+359 -396	+1009 -1000	+655 -653	+1249	+2127 -528	+2498	-1308	+2265 -1190	44.41	1-C.P. (24"x 1/2") 22" 4-Ls 6"x4"x 1/2" 4 Webs 30"x 9/16	(S)	r_o=10.6 r_y=11.1	G. 985 N. 814
U6 U7	+811	+407 -290	+30 -41	+437 -331	7 6	+28 -19	+464 -349	+1511	-668	+366 -340	+1026 -1017	+666 -664	+1275	+2171 -594	+2597	-1332	+2900 -1210	45.35	Same as U5 U6	(S)	do	do	G. 985 N. 814
U7 U8	+1642	+456 -75	+25 -9	+481 -84	5 9	+22 -7	+503 -91	+1856	+639	+179 -170	+663 -651	+515 -568	+2345	+3028	+2519	+1014	+3130	46.65	1-C.P. (24"x 1/2") 21" 4-Ls 6"x4"x 9/16" 4 Webs 30"x 5/16"	(S)		G. 1232 N. 1016
U8 U9	+1901	+471 -78	+26 -9	+497 -86	5 9	+23 -8	+520 -94	+1915	+659	+184 -175	+683 -670	+387 -377	+2421	+3125	+2598	+1046	+3240	48.13	Same as U7 U8	(S)	do		G. 1252 N. 1016
Lo U1	-601	+101 -280	+11 -64	+112 -344	7 6	+7 -19	+119 -363	-2	-1203	+119 -117	+225 -226	+173 -174	-964	-1443	+223 -228	-1177	+203 -1443	64.70	5 Ls 6"x4"x 5/16" 2-Webs 30"x 5/16" 2-Webs 30"x 3/16"	(S)	r_o= 9.9 r_y=11.6	G. 669 N. 545
U1 L2	+314	+212 -110	+53 -11	+264 -121	6 6	+16 -7	+280 -128	-127	+704	+117 -121	+226 -222	+174 -166	+594	+1009 -175	+99 -349	+878	+1009 -917	57.45	4-Ls 6"x4"x 5/16" 2-Webs 30"x 1/2"	(S)		G. 446 N. 361
L2 U3	+8	+144 -164	+22 -44	+166 -208	6 6	+10 -13	+176 -221	+298	-381	+119 -113	+231 -223	+167 -164	+276 -307	+658 -730	+529	-545	+658 -730	60.98	4-Ls 6"x4"x 5/16" 2-Webs 24"x 1/2"	(S)	r_o= 8.3 r_y=11.5	G. 384 N. 301
U3 L4	-326	+111 -174	+32 -51	+143 -201	7 6	+10 -11	+153 -215	-438	+53	+108 -115	+221 -219	+162 -161	-541	+225 -911	-657	+215 -108	+225 -911	56.96	4-Ls 6"x4"x 1/2" 2-Webs 24"x 1/2"	(S)	r_o= 8.5 r_y=11.4	G. 43 N. 396
L3 U3	+705	+223 -61	+49 -19	+272 -79	5 7	+14 -6	+286 -85	+572	+418	+69 -79	+159 -150	+104 -102	+991	+1346	+731	+522	+1346	58.80	4-Ls 6"x4"x 1/2" 2-Webs 27"x 5/16	(S)		G. 526 N. 421
U3 L6	-872	+16 -228	+5 -58	+21 -286	8 5	+2 -14	+22 -300	-519	-785	+86 -79	+170 -171	+134 -137	-1172	-1551	-690	-922	-1562	58.27	4-Ls 6"x4"x 5/16" 4 Webs 30"x 5/16"	(S)	r_o= 9.7 r_y=11.5	G. 669
L6 U7	+881	+276 -49	+70 -5	+346 -54	6 7	+19 -4	+365 -57	+312	+1198	+154 -166	+313 -313	+226 -241	+1252	+1771 -1	+625 -1	+1364	+1771 -1	70.59	4 Ls 6"x4"x 5/16" 4 Webs 30"x 1/2"	(S)		G. 744 N. 607
U7 L8	-648	+67 -258	+7 -55	+74 -293	7 6	+5 -16	+79 -310	-147	-919	+163 -156	+289 -289	+224 -224	-958	-1423	+142 -436	-1143	+129 -1423	71.61	4 Ls 6"x4"x 1/2" 4 Webs 30"x 1/2"	(S)	r_o= 9.9 r_y=11.4	G. 79. N. 642
L8 U9	+619	+258 -96	+58 -10	+315 -106	6 7	+18 -7	+333 -113	+69	+991	+186 -194	+338 -339	+260 -257	+952	+1470	+407 -270	+1251	+1470 -245	101.53	4 Ls 6"x4"x 5/16" 2 Webs 30"x 3/16"	(S)		G. 594 N. 484
L0 U0	-85	0 -55	0 -50	\0 -104	0 30	0 -32	0 -136	-130	-90	-56	-70	-61	-221	-412	-200	-151	-412	44.80	2-15" B 40#	(S)	r_o= 5.4 r_y=11.5	G. 234 N.	
L1 U1	+16	0 0	0 0	0 0	0 0	0 0	0 0	+16	+17	+2	-1	-1	+16	+18	+16	+17	+21	42.19	2-15" B 33.9#			G. 198 N. 155
L2 U2	-171	0 -55	0 -50	0 -104	0 24	0 -25	0 -129	-160	-176	0	-1	-1	-300	-428	-161	-177	-428	39.58	2-15" B 40#	(S)	r_o= 5.4 r_y=11.5	G. 234 N. 185
L3 U3	+30	0 0	0 0	0 0	0 0	0 0	0 0	+30	+32	-2	-5	-3	+30	+30	+90	+32	+40	38.72	2-15" B 33.9#			G. 198 N. 155
L4 U4	-175	0 -55	0 -50	0 -104	0 24	0 -25	0 -129	-164	-181	+2	-1	-1	-304	-432	-165	-182	-432	37.86	2-15" B 40#	(S)	r_o= 5.4 r_y=11.5	G. 234 N.
L5 U5	+32	0 0	0 0	0 0	0 0	0 0	0 0	+32	+32	-61	-113	-60	+32	+32 -29	+32 -81	+32 -28	+43 -74	39.35	2-15" B 40#		r_o= 5.4 r_y=11.5	G. 234 N. 185
L6 U6	+63 -89	+45 -87	+5 -56	+50 -142	7 6	+9 -8	+53 -150	+138 -161	-248	+41 -49	+85 -97	+56 -72	+169 -239	+295 -457	+223 -258	-320		44.20	2 Webs 24"x 1/2" 4 Ls 6"x4"x 1/2"	(S)	r_o= 8.6 r_y=11.5	G. 43. N. 342
L7 U7	+180 +34	+55 0	+50 0	+104 0	24 0	+25	+129 0	+66	+184	-35	+2 -21	+2 -25	+309	+497	+68	+186		55.85	4 Webs 24"x 1/2" 4 Ls 6"x4"x 1/2"	(S)	r_o= 8.0 r_y=11.3	G. 67. N. 538
L8 U8	+124 -22	+39 -61	+3 -51	+42 -112	5 9	+2 -10	+44 -121	+122 -169	+22 -128	+16 -45	+58 -82	+29 -62	+185 -158	+312 -430	+180 -251	+51 -190		72.00	4 Ls 6"x4"x 5/16" 2 Webs 24"x 1/2"	(S)	r_o= 8.4 r_y=11.4	G. 384 N. 301
L9 U9	+1305 -1451	+1 -301	+1 -49	+2 -350	18 4	0 -12	+2 -363	-288	-1180	+374 -366	+286 -420	+219 -285	-1814	-2542	-708	-1465	-2542	93.00	4 Ls 6"x 6"x 5/8" 8 Webs 36"x (5/16) 3/4"	(S)	r_o= 11.4 r_y= 10.7	G. 1958

MEMBERS IN SPAN 1

BAR	DEAD STRESS	LIVE STRESS UNIF.	LIVE STRESS CONC.	LIVE STRESS TOTAL	% I	IMP.	LIVE & IMP.	ERECTION DEAD + TRAV. A	ERECTION DEAD + TRAV. B	WIND COMP. STRUCT.	WIND ERECTION A	WIND ERECTION B	D+L+I	D+[L+I]+W	TOTAL ERECT. A	TOTAL ERECT. B	DESIGN STRESS BASIS OF 32,400	LENGTH	MAKE-UP OF SECTIONS	ASSEMBLY	RADIUS OF GYRATION	AREA
Lo L1'	-2800	-71 -670	+8 -53	-78 -702	10 4	+8 -31	+86 -754	-2475		+180 -487	+19 -177		-3534	-4755	-2652		-4755	61.17	4 Fig. 6 8"x6"x 3/8" 4 @ 8"-0"= 64" 6 Webs 36"x 9/16" 1 Diaphragm 13"x 3/8"	(S)	r_o=10.4 r_y=10.0	G. 261.8
L0 L1'	-814	+124 -341	+25 -33	+149 -374	7 5	+10 -20	+159 -394	-1652		+103 -119	+123 -136		-1208	-1721	-1788		-1721	53.94	4 Ls 6"x6"x 9/16" 4 Webs 36"x 9/16	(S)	r_o=12.0 r_y=11.0	G. 118.6
L1' L2'	-744	+114 -312	+23 -31	+137 -343	7 5	+10 -19	+146 -362	-1512		+152 -160	+35 -47		-1106	-1628	-1559		-1628	49.33	4 Ls 6"x6"x 1/2" 4 Webs 36"x 1/2"	(S)	r_o=12.2 r_y=11.2	G. 95.0
L2' L3'	-1002	+428 -270	+52 -26	+480' -296	7 5	+35 -16	+514 -311	-646		+367 -410	+30 -45		+1516	+2397 -628	-691		+2397 -628	46.68	4 Ls 6"x4"x 5/16" 4 Webs 36"x 1/2"	(S)	r_o=12.1 r_y=11.6	G. 954 N. 774
L3' L4'	+976	+417 -263	+50 -25	+467 -288	7 5	+34 -15	+501 -303	-630		+388 -424	+4 -49		+1477	+2366 -612	-675		+2366 -612	45.45	Same as L2' L3'	(S)	do	do	G. 954 N. 774
L4' L5'	+1970	+632 -277	+70 -19	+702 -296	7 5	+51 -16	+752 -312	-54		+544 -573	+0 -32		+2722	+4018 -78	-86		+4018 -78	44.55	4 Ls 8"x6"x 5/8" 4 Webs 36"x 1/2" 2 Webs 36"x 5/16"	(S)		G. 1549 N. 1275
L5' L6'	+1946	+625 -274	+69 -19	+694 -293	7 5	+50 -16	+744 -309	-53		+549 -572	-2		+2690	+3983 -50	-55		+3983 -50	44.05	Same as L4' L5' 22"	(S)	do		G. 1549 N. 1275
U0 U1'	+1646	+437 -63	+29 -10	+466 -73	5 9	+21 -7	+487 -80	+1851		+63 -127	+401 -482		+2133	+2683	+2252		+2844	49.42	1 C.P. (24"x 1/2") 23" 4 Ls 6"x4"x 3/8" 2 Webs 30"x 5/16" 3/4" 2 Webs 30"x 1/2"	(S)		G. 1074 N. 885
U0 U1'	+1621	+430 -62	+28 -10	+458 -72	5 9	+21 -7	+479 -79	+1826		+152 -187	+315 -381		+2100	+2711	+2141		+2800	48.75	Same as U0 U1	(S)	do		G. 1074 N. 885
U1' U2'	-199	+260 -255	+28 -39	+288 -294	5 8	+14 -24	+302 -318	+1054		+53 -44	+166 -218		+245 -599	+751 -1112	+1220		+1110 -1112	46.99	1 C.P. (24"x 1/2") 23" 4 Ls 6"x4"x 3/8" 2 Webs 30"x 3/16"	(S)	r_o=10.8 r_y=11.0	G. 714 N. 594
U2' U3'	-194	+254 -249	+27 -37	+281 -286	5 8	+14 -24	+295 -310	+1030		+52 -60	+108 -148		+239 -584	+733 -1101	+1138		+1032 -1101	45.88	Same as U1' U2'	(S)	do	do	G. 714 N. 594
U3' U4'	-1577	+271 -549	+22 -62	+293 -611	5 7	+15 -44	+308 -655	+304		+142 -151	+54 -82		-2252	-3039	+358		+326 -3039	44.91	1 C.P. (24"x 1/2") 22" 8 Ls 6"x4"x 1/2" 6 Webs 30"x 5/16"	(S)	r_o=10.7 r_y=10.7	G. 1176 N. 987
U4' U5'	-1556	+268 -543	+22 -63	+290 -606	5 7	+15 -44	+305 -650	+300		+123 -127	+21 -40		-2206	-2983	+321		+291 -2983	44.34	Same as U3' U4'	(S)	do	do	G. 1176 N. 987
U5' U6'	-2081	+277 -656	+16 -72	+293 -728	5 7	+15 -53	+308 -781	0		+194 -182	+0 -8		-2862	-3825	-8		-3825	44.05	1 C.P. (24"x 1/2") 21" 4 Ls 6"x4"x 1/2" 8 Webs 30"x 5/16"	(S)	r_o=10.8	G. 144.
U3' L4'	+826	+209 -62	+38 -8	+247 -70	7 5	+18 -4	+265 -74	+201		+133 -129	+66 -71		+1091	+1489	+267		+1489	66.98	4 Ls 6"x4"x 5/16" 2 Webs 30"x 11/16"	(S)		G. 985 N. 471
L4' U5'	-1890	+72 -441	+7 -73	+80 -514	5 7	+4 -37	+84 -551	-708		+238 -235	+104 -103		-2441	-3227	-811		-3256	103.79	4 Ls 8"x6"x 1" 8 Webs 36"x 5/8"	(S)	r_o=11.5 r_y=10.5	G. 232.
U5' L6'	+1154	+271 -38	+46 -6	+317 -44	5 8	+16 -3	+333 -47	+491		+158 -160	+31 -35		+1487	+1978	+522		+1984	59.80	4 Ls 6"x4"x 1/2" 2 Webs 30"x 9/16" 2 Webs 30"x 1/2"	(S)		G. 828 N. 673
L2' U2'	+1426	+74 -364	+9 -61	+83 -425	7 5	+6 -22	+89 -447	-708		+185 -182	+19 -18		-1873	-2502	-726		-2502	82.68	4 Ls 8"x6"x 5/8" 4 Webs 30"x 5/8" 3 Webs 30"x 9/16"	(S)	r_o= 9.9 r_y=10.8	G. 1422
U2' L3'	+839	+242 -71	+43 -10	+285 -81	5 7	+15 -6	+301 -87	+435		+120 -121	+0 -2		+1140	+1561	+435		+1561	61.52	4 Ls 6"x4"x 1/2" 2 Webs 30"x 3/4"	(S)		G. 64 N. 51.9
L3' U4'	-658	+119 -244	+19 -46	+132 -290	7 6	+9 -16	+141 -306	-403		+94 -87	+6 -4		-964	-1357	-407		-1357	72.40	4 Ls 6"x4"x 5/8" 2 Webs 30"x 3/4"	(S)	r_o=10.5 r_y= 11.4	G. 684
U4' L5'	+202	+178 -138	+34 -25	+212 -163	6 6	+12 -10	+224 -173	+79		+29 -27	+0 -0		+442 -48	+782 -335	+79		+782 -335	65.48	4 Ls 6"x4"x 5/8" 2 Webs 21"x 1/2" 6"	(S)	r_o= 7.8	G. 354 N. 27.
U0 L0	-85 -231	+2 -67	+0.4 -49	+2 -117	10 4	+0.2 -5	+3 -122	-160		+6 -40	+21 -17		-353	-515	-177		-515	73.00	4 Ls (5") 5/16" 2 Webs 21"x 1/2" 4"	(S)	r_o= 7.7	G. 377
U1' L1'	+54	+75 -56	+55 -8	+130 -64	7 6	+9 -4	+139 -68	-214		+17 -14	+18 -19		+209 -47	+398 -181	-233		+398 -212	62.80	2-18" B 45.8#		r_o= 6.6	G. 268 N. 22.
U2' L2'	-14	+19 -19	+4 -3	+23 -22	8 5	+2 -1	+25 -23	-132		+3 -16	+13 -12		+24 -45	+63 -96	-144		+63 -130	57.00	2-18" B 45.8#		r_o= 6.6	G. 268 N. 22.
U3' L3'	+281	+99 -24	+36 -3	+149 -27	7 5	+10 -1	+159 -28	-13		+33 -33	+0 -7		+440	+632	-20		+632 -18	54.40	2-18" B 45.8#	(S)		G. 268 N. 22.
U4' L4'	+78	+43 -21	+7 -3	+50 -24	7 5	+3 -1	+53 -25	-148		+10 -10	+3 -4		+131	+194	-152		+194 -138	52.00	2-15" B 33.9#		r_o= 5.6	G. 198 N. 15.7
U5' L5'	+424	+126 -31	+61 -3	+186 -34	7 5	+13 -2	+199 -36	+51		+52 -64	0 0		+623	+874	+51		+874	50.50	2-15" B 50.0# 2 Pls 12"x 3/8"	(S)		G. 385 N. 307
U6' L6'	+91	+45 -19	+7 -2	+52 -21	7 5	+4 -1	+56 -22	-27		+12 -13	0 0		+147	+215	-27		+215 -25	50.00	2-15" B 33.9#			G. 198 N. 157
Ko Gross		+509	+238	+50	+288	5	+16	+303	+57	+775	+139		+806	+1242								
Kq Gross		+3572	+779	+50	+829	4	+56	+865	+2183	+2510	+714		+4437	+6016								

Erection "B" does not control design of these members

BAR	MOM. IN FT. KIPS DUE TO WIND COMP. STRUCT.	WIND ERECTION	RESISTANCE TO BUCKLING
U0 L0	19	19	325
U1' L1'	121	121	472
U0 L0	146	146	
U0 L0	578	632	1500
L0 L1'	862	960	
L0 L1'	815	895	
L1' L2'	705	775	

NOTES:

The stress in the column marked "Design Stress" equals for each member, the largest of the following three values: $\frac{5}{8}$(D+L+I); D+2(L+I)+W; $\frac{10}{8}$(total erection stress). See specifications.

The stresses in the columns marked "Erection A" are based on the assumption that the trusses extend from panel points 0 to 16, inclusive; the floor steel (no concrete) is in place from panel points 0 to 11, inclusive; the traveler load is at U11.

The stresses in the columns marked "Erection B" are based on the assumption that the trusses extend from panel points 0 to 14, inclusive; the floor steel is in place from panel points 0 to 11, inclusive; the traveler load is at U9.

Material listed under make-up of sections and marked (S) to be of silicon steel.

FAY, SPOFFORD & THORNDIKE, ENGINEERS
BY Charles M. Spofford

WAR DEPARTMENT
CORPS OF ENGINEERS U. S. ARMY
OFFICE OF DISTRICT ENGINEER, BOSTON, MASS.

HIGHWAY BRIDGES

OVER CAPE COD CANAL
AT BOURNE, MASSACHUSETTS

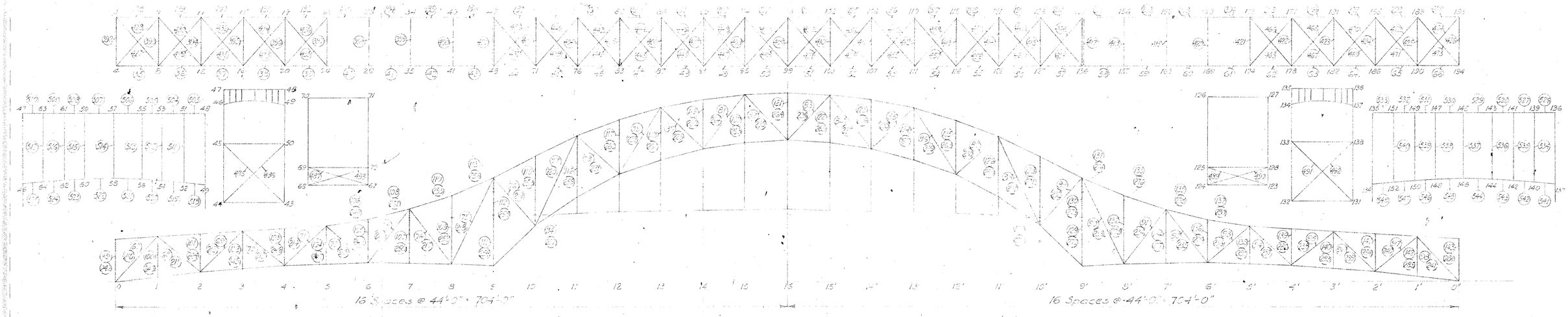
SAGAMORE AND BOURNE BRIDGES
STRESS SHEET - SPANS 1, 2 AND 3.

APPROVED R. Park
LT. COL. CORPS OF ENGINEERS
DECEMBER 1933

SUPERSTRUCTURE CONTRACT PLANS SHEET No. 7 OF (17)

FAY, SPOFFORD & THORNDIKE
BOSTON, MASSACHUSETTS
DESIGNED BY J.B.W.C.
DRAWN BY W.L.C.
TRACED BY E.T.M.
CHECKED BY E.K.B.

FIG. 7



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CAPE COD CANAL, MASSACHUSETTS

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MATHEMATICAL MODEL- MAIN SPAN

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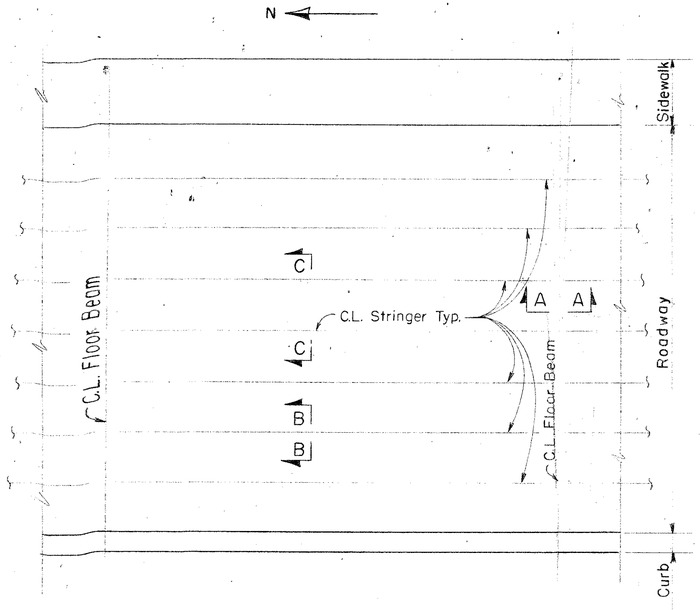
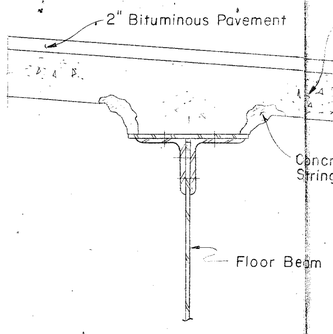
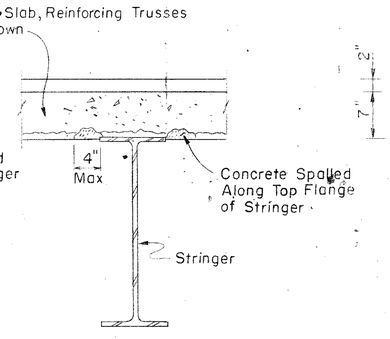


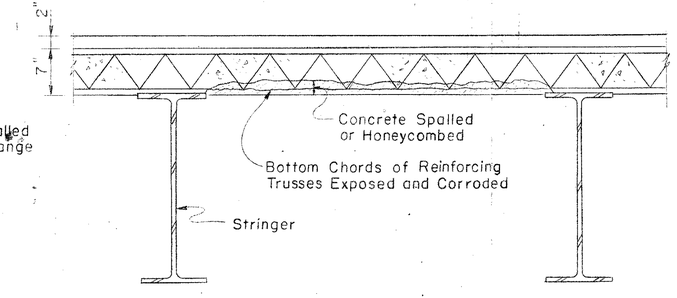
PLAN OF TYPICAL BAY
Scale $\frac{1}{8}$" = 1'-0"



SECTION A-A
Scale 1" = 1'-0"



SECTION B B
Scale 1" = 1'-0"



SECTION C-C
Scale 1" = 1'-0"

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DECK DETERIORATION

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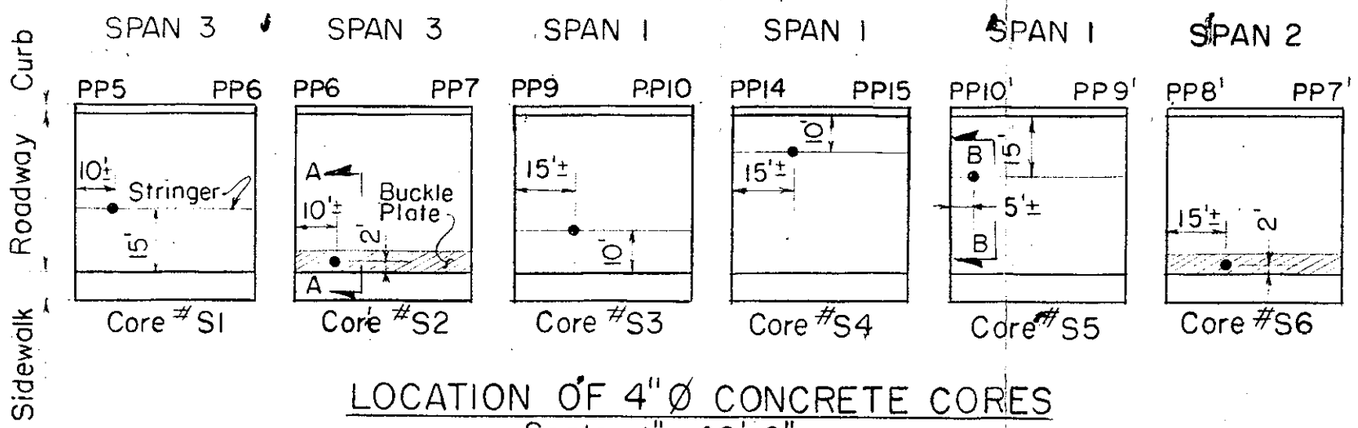
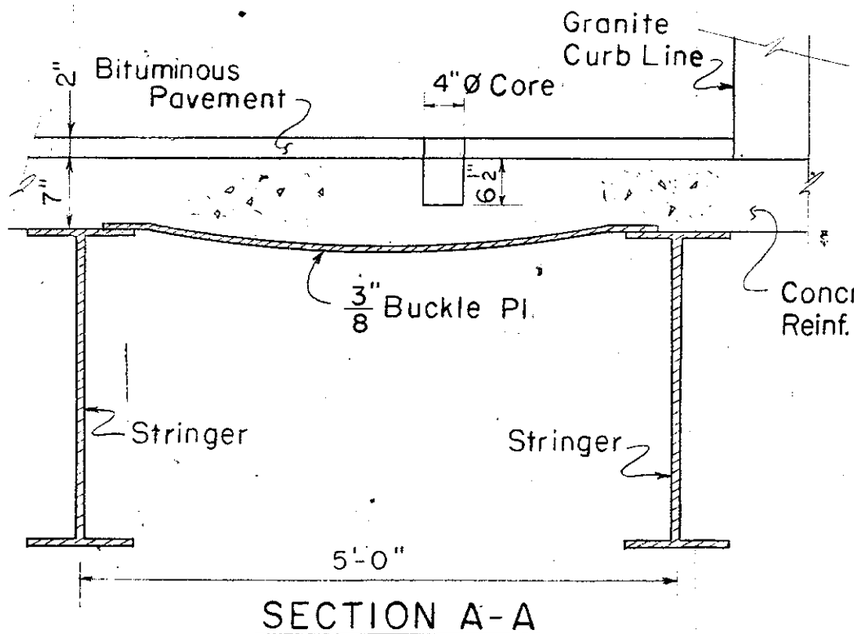
FIG. 9



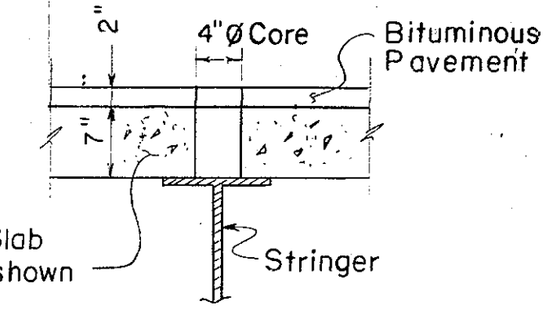
LOCATION OF 4"Ø CONCRETE CORES

Scale: 1" = 40'-0"



SECTION A-A
4"Ø CORE AT BUCKLE PL

Scale 3/4" = 1'-0"



SECTION B-B
4"Ø CORE AT STRINGER

Scale 3/4" = 1'-0"

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CORE LOCATIONS

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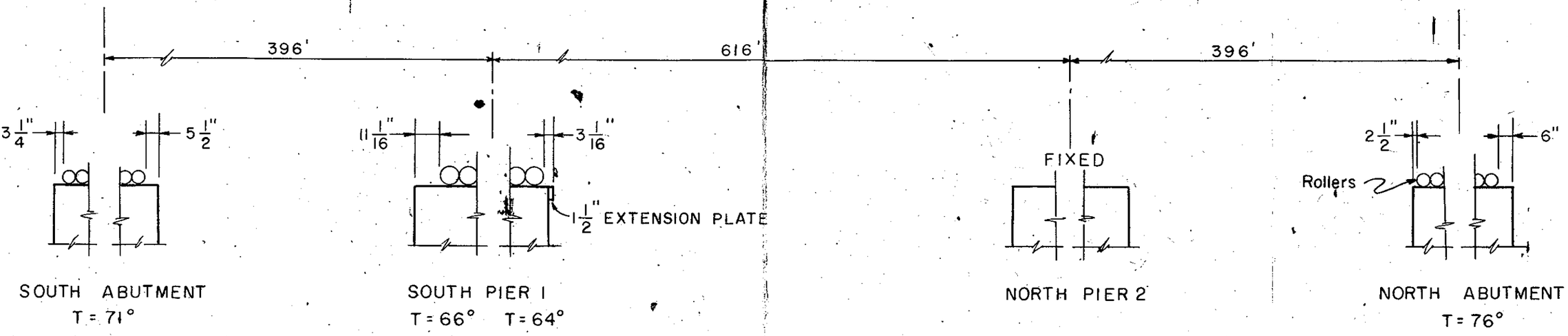
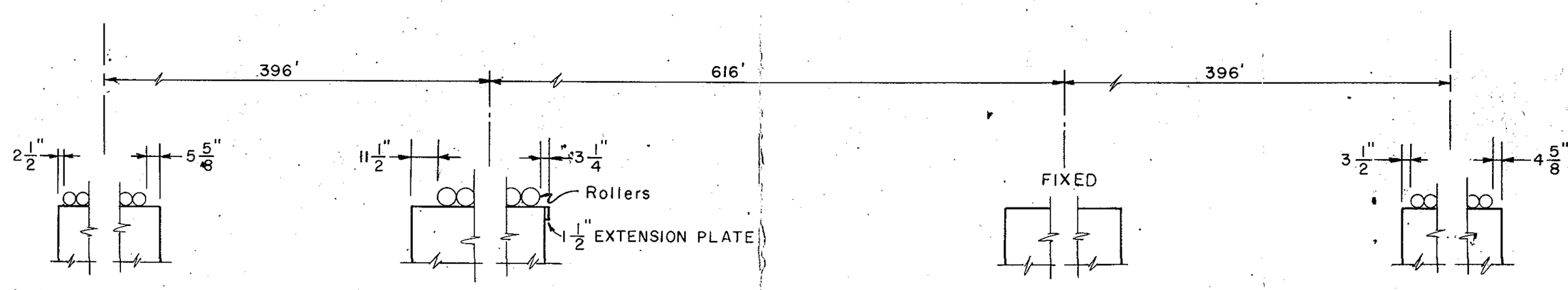
FIG. 10



WEST TRUSS BEARING
Scale 1/4" = 1'-0"



EAST TRUSS BEARING
Scale 1/4" = 1'-0"

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BEARING POSITIONS

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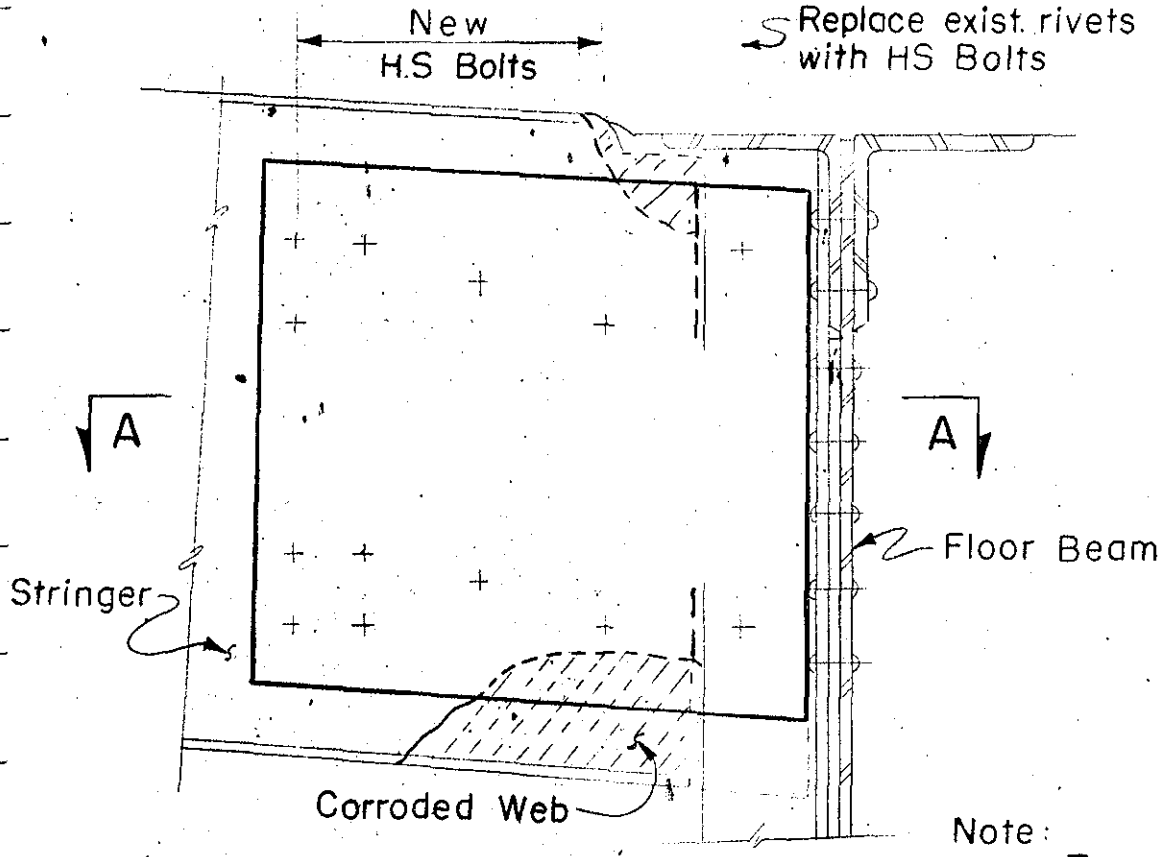
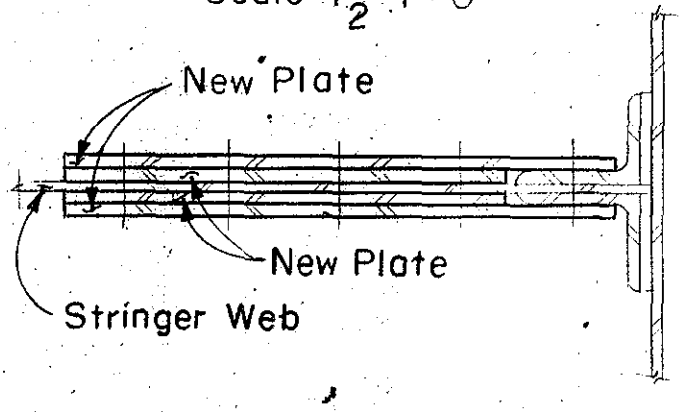


Note:
Temporary Support for Stringer not shown.

STRINGER ELEVATION

Scale $1\frac{1}{2}" = 1'-0"$



SECTION A-A

Scale $1\frac{1}{2}" = 1'-0"$

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STRINGER REPAIR

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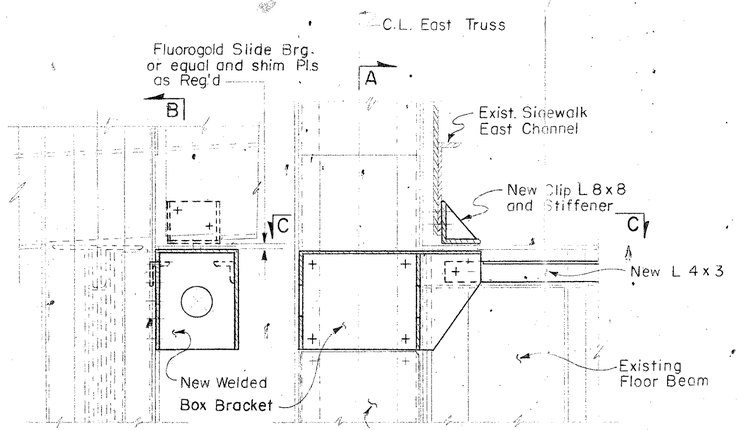
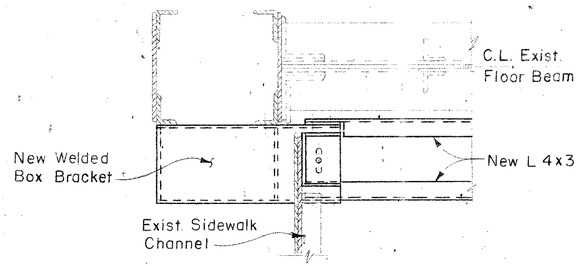
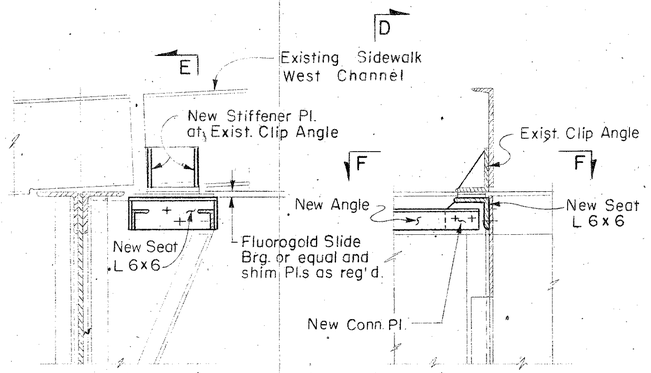


SECTION A-A
Scale $\frac{3}{4}$" = 1'-0"

SECTION B-B
Scale $\frac{3}{4}$" = 1'-0"

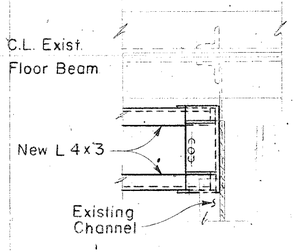


SECTION C-C
Scale $\frac{3}{4}$" = 1'-0"

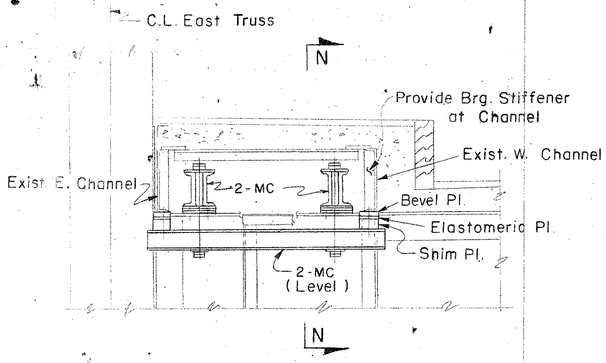


SECTION D-D
Scale $\frac{3}{4}$" = 1'-0"

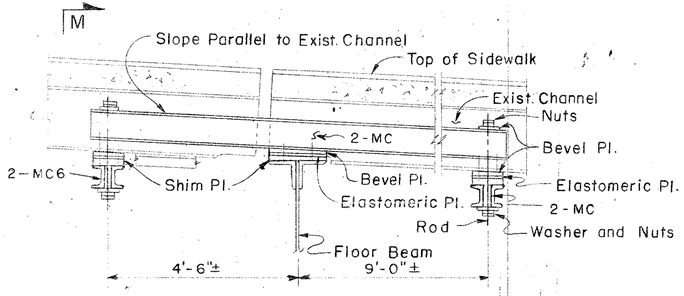
SECTION E-E
Scale $\frac{3}{4}$" = 1'-0"



SECTION F-F
Scale $\frac{3}{4}$" = 1'-0"



SECTION M-M
Scale $\frac{1}{2}$" = 1'-0"



SECTION N-N
Scale $\frac{1}{2}$" = 1'-0"

TEMPORARY SUPPORT OF CHANNELS

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NEW ENGLAND DIVISION, CORPS OF ENGINEERS
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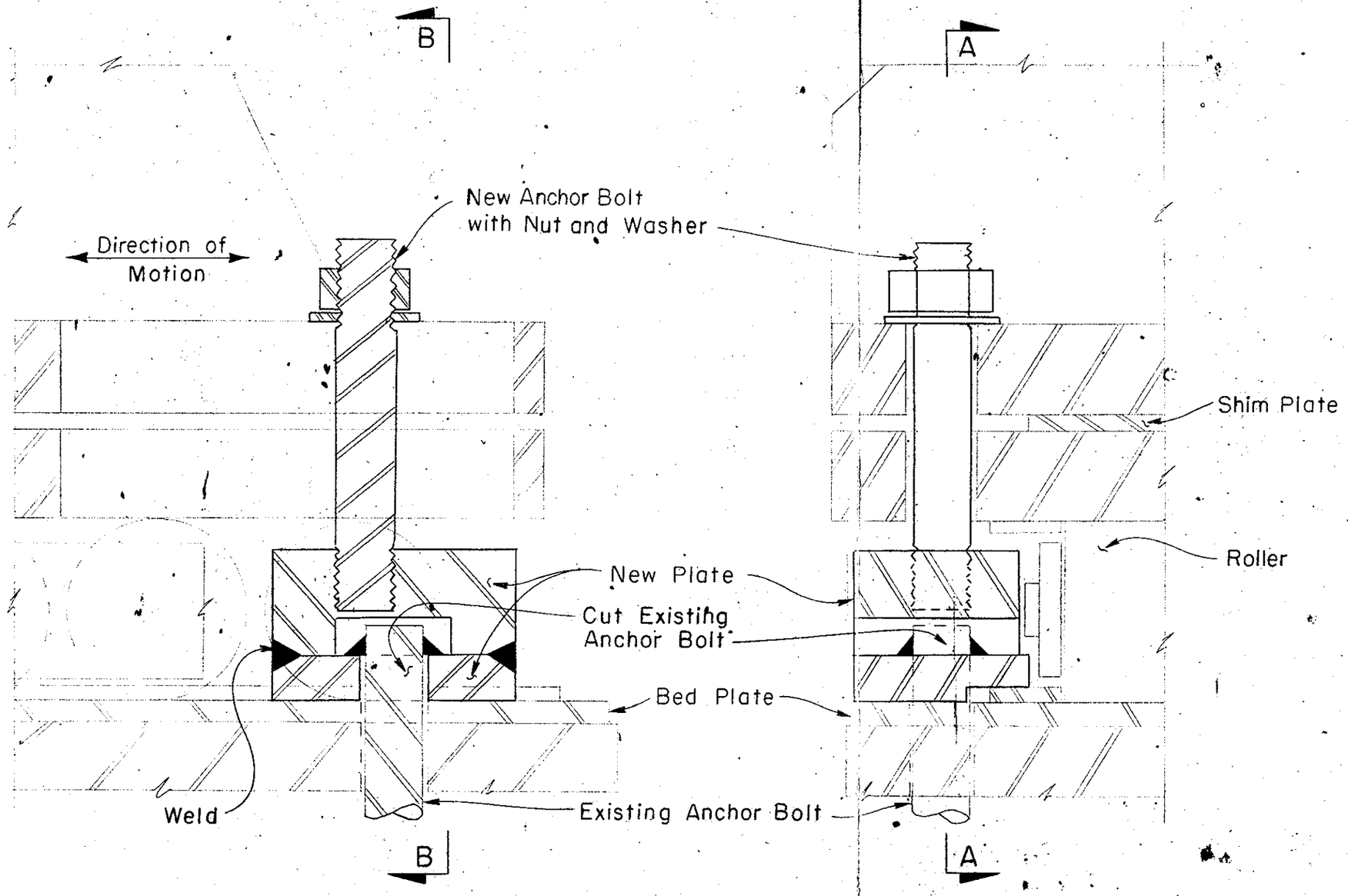
SAGAMORE HIGHWAY BRIDGE
1976 CONDITION REPORT
SIDEWALK CHANNEL SUPPORT & REPAIR
AMMANN & WHITNEY, N.Y., N.Y.

FIG. 13



SECTION A-A

SECTION B-B

Scale $\frac{1}{4}$" = 1'-0'

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ANCHOR BOLT REPAIR

AMMANN & WHITNEY, N.Y., N.Y.